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EDUCATION AND SANITATION.

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In calling attention to education and sanitation, I shall not attempt any exhaustive treatment of the manifold relations between them.

Every one asks with supreme interest, "How long shall I live, and under what conditions?" The energies of the individual and of civilization are invoked to prolong life and increase its comforts and success.

The story of this struggle for life requires in its rehearsal none of the imagery of poetry: figures tell it in the shortest terms. The last complete census of our own country, that of 1870, shows that over forty per cent of the population die under five years of age. Nearly half of the mourning is over the deaths in these tender years. How large a proportion of the population is ill on any given day has not been ascertained. But as showing the supply or the lack of the comforts of life, Dr. Jarvis, an expert in these statistics, points out that the white population is about evenly divided between those that are self-sustaining and those that are dependent, while of the colored population fifty-five per cent are dependent.

Education and sanitation represent great forces invoked by man in the endeavor to prolong his life and improve his condition, — the one, the science and art of culture; the other, the science and art of health. As terms, they may not always have been present in the vocabulary of the ancients; but the ideas they express, the facts which they include, and the objects at which they aim, are ever present in human endeavors, and are as universal in man's experience as death and sickness and ignorance, which they antagonize.

Man finds for himself, as for all the lower orders of animal and vegetable life, everywhere, over against the law of good, the law of evil; the nerve that tells of enjoyment is the nerve that tells of

suffering. The principle of growth may be everywhere applied to pervert or perfect, and in its neglect appears the law of decay. Wrapped in the same bundle are the laws of health and disease. Since impressed with the image of his Creator, and receiving the command, "Be fruitful, and multiply and replenish the earth, and subdue it; and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth," man, as the crown of this visible creation, has found it possible to bring under control, for his good, all of his own powers, and all of the forces and conditions of nature around him. Slowly, with halting and sometimes with backward step, and generally through devious course, man has reached his present marked degree of facility in commanding the secrets of nature. In the place of the wigwam or cave of the savage he rears the mansion of civilization, ventilated and heated to increase health, promote length of days, inspire his purity, and please his sense of the beautiful. For his food he transforms the crab-apple into the pippin, the bitter almond into the luscious peach, the wild ox into the Alderney or the Durham, the wild sheep into the improved Saxon. He makes the barren soil productive, he transforms the malarial or poisonous conditions of his home into the salubrious and healthful. For clothing he no longer tolerates the leaf of the tree or the rude skin of the animal, but adorns himself with garments wrought by the highest skill from the improved cotton, the cultured merino, the developed silk, and adorned with colors as rich as the famed Tyrian or Venetian dyes. His spiritual, intellectual, and æsthetic aptitudes are supplied by invoking a corresponding change in agencies, objects, and instruments. The resistance to comfort and health offered by time and space he assails with the powers of steam and the velocity of the lightning. In all this transformation he has applied the semi-creative principles of culture, at once so simple and so universal. In his observation and experience he has found a certain uniformity, a certain order of relation of facts, which he has called law; he found the relations of cause and effect, that establishing one condition produced another; he could do this for himself, or he could teach to others the principles which he followed for his own benefit. This is education, which imparts knowledge, and nourishes or trains; beginning with every one of us before we reach the cradle, it cannot end before the termination of this mortal existence. It may be perverted and bad, and hasten human ills; there is education in crime, — indeed, criminals have a life and language of their own, and have attempted the preparation of literature as well as of implements of their business. If the

purposes or methods of education are an admixture of what ought and what ought not to be, the results must correspond, and at best can be only partially good. We may conceive education to be wholly good, and yet we rarely find it so in this state of imperfection. It may be wholly bad, and yet it is not often so, even in savage life. The instinct of self-preservation, the pure selfishness of nature, finds out and employs some of the right processes of education or betterment. Education may — nay, must — go on, either by neglect or by intent; human conditions cannot be stationary. Right education for its highest ends adopts the precepts of morality towards man and piety towards God. It practises and teaches conformity to the laws of matter and the laws of spirit. Wherever, in thus carrying forward human progress, it encounters disease of mind and body, or trains in the practice of health, or teaches its doctrines, it enters into relations with the science and art of sanitation.

Just as a right education is a preventive of crime and cheaper than the machinery for its detection and punishment, so is sanitation a preventive of disease and cheaper than the appliances for its cure. This right education should train the child, the adult, and the community in the precepts of sanitation, so that every individual may have secured to him that first requisite of power, labor, and happiness, — a sound mind in a healthy body. Education is false or impotent without the doctrines or training of sanitation; as the natural constitution itself may be healthy or unhealthy, so may that second nature added by education, which we call habit. Put unhealthy treatment to a diseased system, and how soon that system will vanish like vapor! On the other hand, bring up the child of sound mind and body in the knowledge and practice of the principles of health, and what a promise there is for his maturity and vigor!

These doctrines are not new; indeed, they are so old and recur so frequently in literature that the statement of them may seem stale, though required by the exigencies of the day. The philosopher finds them illustrated in all his comparative study of races, nations, and systems of belief. The Jew and Christian note them in the remarkable sanitary code given the Hebrews. Pointing to the restraints it imposes on man's destructive passions and appetites, and the healthfulness of its moderation, to its rules for cleanliness, to its rules for eating meats, and to its classification of things as clean and unclean, they pronounce the descendants of Jacob, — scattered in every nation and every clime, — so full of physical and mental vigor, ever-present indications of the excellences of this code given in the infancy of the race. The Levitical priesthood ap-

pears not only as presiding at the altar, over the rites of man's worship of Deity, but as the depositary of learning for their own and the other tribes, and as especially taught in all the knowledge of preventive and curative medicine possessed and practised in their times. The same was true respecting the Egyptians, among whom the Israelites were so long in bondage. Herodotus found the Egyptian priesthood a sort of nobility, whose education included not only instruction in history, national and civil, astronomy, geometry, jurisprudence, and civil polity, but in medicine. Jahn observes that "They were practising physicians, inspectors of weights and measures, surveyors of lands, astronomical calculators, keepers of the archives, historians, receivers of the customs, judges, counsellors of the king, who was himself a member of their order."

Hippocrates ascribed the origin of medicine to the discovery that the sick were injured by the use of food which was beneficial in health. But the progress of the science or art of medicine, whether curative or preventive, has ever been dependent, like that of mathematics or chemistry, or any science or art, upon education. Education must teach, train, and prepare the men that make its discoveries and announce its precepts, and must also teach these to others, and thus disseminate a knowledge of them for general benefit.

Greek history and literature present interesting illustrations of the interweaving of the precepts and practices of education and sanitation. Mitford considered it remarkable that Homer nowhere speaks in plain terms of sickness. He indeed mentions diseases, but as the effect of the immediate stroke of Deity. The marked desire of the Greeks for physical excellence inspired them to lead a course of life conducive to health. Homer has left us many pictures of feasts and relaxations, and once mentions drunkenness as a warning example. Exercise was the delight of his heroes, and excellence in manly sports their pride. The Phæacians exhibit their games before Ulysses, that he may relate

> "How in the boxing and the wrestling match,
> In leaping and in running we excel."

Grote observes that Greek towns were built "at some distance inland, on a rock or elevation which could not be approached without notice, or scaled without difficulty"; thus furnishing conditions favorable to pure air and good drainage, and to the ideal town of Plato. This philosopher calls attention to the fact that Homer feeds his heroes when they are campaigning on soldiers' fare. They have no fish, though they are on the shores of the Hellespont. Sweet sauces are not even mentioned by him.

It has been held that the laws of Lycurgus, in force seven hundred years, made a race totally different from any other. Plutarch says, "The most masterly stroke of the great Spartan lawgiver was the ordinance that he made that all should eat in common of the same bread and same meat, and of kinds that were specified, and should not spend their lives at home, lying on costly couches, delivering themselves into the hands of their tradesmen and cooks, to fatten them like greedy brutes, and to ruin not their minds only, but their very bodies, which, enfeebled by indulgence and excess, would stand in need of long sleep, warm bathing, freedom from work, and in a word, of as much care and attendance as if they were continually sick." Their public repasts were schools of sobriety and temperance; their most famous dish was the black broth, the relish for which was found in a cold bath in the Eurotas. He provided abundant exercises, and such displays as induced both men and women to care for their health. Mitford emphasizes the fact that he required the women to be specially trained, that their offspring might be vigorous. If they were not, they were exposed on Mount Taygetus. Education was publicly conducted, and aimed at endurance, courage, and strength. Plato declared that those employed in the Spartan secret service "wander over the whole country, by day and by night, and even in winter have not any shoes on their feet, and are without beds to lie upon, and have no one to attend them." Lycurgus, knowing that "a merry heart doeth good like a medicine," prescribed mirth for his people, and the Spartans were ever "famous for mirth guided by wisdom."

Of the laws of the Athenians, as given by Solon, little is written; but Plutarch and Grote, as well as others, call attention to the fact that they reached all departments of private life, and regulated even the walks and feasts of the women. Says Curtius: "In the shady wrestling grounds which spread themselves out in the neighborhood of the city, the young Athenians were to unfold the vigor of their bodies and their minds, and grow to be a part of the state, which demanded men not drilled in Spartan fashion, but fully and freely developed."

Grote remarks that "Pythagoras appears as the revealer of a mode of life calculated to raise his disciples above the level of mankind, and to recommend them to the favor of the gods." "The Pythagorean rule of life," observes Grote, "was distinguished by a multiplicity of abstinences in alimental and other physical circumstances of life, which were held to be of the most imperative force and necessity, so that offences against them were of all the most intolerable."

Temperance was enjoined, exercise required, and superiority of mind and body sought. Their diet was chiefly vegetable, and so spare as to become proverbial. Juvenal intimates that a feast for a hundred Pythagoreans might be provided from a farmer's garden.

Hippocrates appeared as the special apostle of hygiene. He declared that men ought to study the nature of man, — what he is with reference to that which he eats and drinks, and to all his other occupations and habits, and to the consequent results from each. However cautious and feeble his medical practice, he urged attention to diet; and in his treatise concerning airs, waters, and places, enunciates great principles of public health. He speaks of medicine as an imitation of nature; he describes diseases as congenital or endemic, or as traceable to regimen, locality, or seasons; he says that he that would understand medicine must study winds, waters, and localities; he points out the relation of the health of a people to their environment.

Attention has been called to the fact that in the earliest times among the Greeks a person's house was used as his place of sepulture. Later it was forbidden to bury within the walls, at least in Athens. At Megara and Tarentum the graves were in a particular part of the city. At Delos, from the time of Pisistratus, no graves were allowed in sight of the temple; and after the sixth year of the Peloponnesian war, nowhere on the island.

From Plato's works it appears that if any one intentionally polluted the water to be used by another, whether the water of a spring or of a reservoir, he would let the injured party bring the cause before the wardens of the city. He remarked that "When disease and intemperance multiply in a state, halls of justice and of medicine are always being opened." He would "feed the people on such provisions as are required by trained warriors, who are men of temperance and courage." Elsewhere he specifies, "They will feed on barley and wheat, kneading the flour and making noble puddings and loaves. These will be served up on a mat of reeds or clean leaves, themselves reclining the while upon beds of yew or myrtle boughs. . . . Of course they will have a relish, — salt and olives and cheese and onions and cabbages, and other country herbs which are fit for boiling; and we shall give them a dessert of figs and pulse and beans and myrtle berries and beechnuts, which they will roast at the fire, drinking in moderation." Thus he expected the people "to live in peace to a good old age, and bequeath a similar life to their children after them."

It is remarked that the daily bath was by no means so indispensable

with the Greeks as with the Romans; but as far as the bath was necessary to cleanliness, its neglect was considered as a matter of reproach. We are told that the public baths were numerous in all Hellenic cities; and in the private dwellings of the better class a chamber was always set apart for the bath.

Physical training occupied a prominent place among the early notions of the Greeks. Plato held that "There ought to be public teachers of gymnastics, receiving pay from the state, and their pupils should be the men and boys, and also the women and girls, who are to know all these things." In education largely physical he saw the continuation of the state; "for good nurture and education implanted good constitutions, and these good constitutions, having their roots in a good education, improved more and more."

Rome, even to-day, in the *cloaca maxima*, or the great sewer, the remains of aqueducts and baths and other monuments, points to the early attention given to the subject of hygiene by the people of the imperial city. Liddell calls attention to the prohibition of burials in the city as early as 260 B. C. From Gibbon we have the affirmation that "All quarters of the capital and all the provinces of the empire were filled with amphitheatres, theatres, temples, porticos, triumphal arches, baths, and aqueducts; all, whether designed for pleasure or utility, were variously conducive to the health of the meanest citizen." Mommsen says that "The bodily exercises of Roman youth advanced from ball playing, running, and fencing to the more artistically developed Greek contests." Another writer observes that "The daily bath, and previous to it strong exercise, were inseparable in the minds of the Romans from the idea of a regular, healthy life." The resources of architecture were brought into requisition in the erection of large buildings for baths. The ornamentations of art were added, and they became the places of amusement. Out of their ruins have been dug some of the priceless statues that adorn modern museums. The Pantheon was merely an entrance to the baths of Agrippa. The visitor is amazed at what remains of the baths of Caracalla, and of those of Diocletian, which alone contained 3,200 marble seats. Even libraries were introduced, and lectures and disputations of philosophers. It is possible that in the more ancient times the use of the cold-water bath was the prevailing one, and persons of simple habits of life adhered to this. "Perspiration and appetite, which earlier generations secured by corporeal exertions and agricultural labor, were attained by a later race by means of sudatoria and hot baths."

Strabo observes, "So plentiful is the supply of water from the

aqueducts that rivers may be said to flow through the city and sewers, and almost every house is furnished with water pipes and copious fountains." Again he says, "The sewers, arched over with hewn stones, are large enough in some parts for a wagon loaded with hay to pass through." Another writer states that "Agrippa, when he cleansed the sewers, passed through them in a boat." The Roman military system in many points shows an appreciation of sanitary principles. At one period we find the imperial city divided into four police districts. Among the sanitary duties of the police were the repair of drains, public buildings and places, proper cleansing and paving of the streets, the prevention of nuisances, the supply of the market of the capital with good and cheap grain, the destruction of unwholesome articles of food, and the oversight of baths and public houses. Cæsar proposed to reduce the malarial influences around the city by draining the Pontine marshes.

Pushing our inquiries for the relation of educational and sanitary considerations among the early Christians, we find that some of them were unfortunate in misapprehending the teachings of their great Master. He taught the subordination of the body to the high purposes of the soul, and enforced purity even to the very thoughts. His followers were to be living temples for His spiritual indwelling. They were to withdraw from sinful practices and associations. They were to be temperate in all things. It would seem that here was the basis as well as the highest motive for a correct and complete system of sanitary doctrines in their application to the individual in all his relations as a member of the family or the church or society or the state. Indeed, it is claimed that all high attainments of sanitary science and art in recent years among the nations leading in Christian civilization are in no small measure due to the precepts of Christianity; but unfortunately there were those who early, under the influence of misinterpretation, became ascetics, and would literally pluck out the right eye or cut off the right hand that offended. Persecution favored their retirement to caves, and their separation from the usual and proper conditions of life. The night of the dark ages brought no adequate corrective. Indeed, amid their darkness, although Christian doctrine places cleanliness next to godliness, there appeared those calling themselves Christians, who "looked on personal dirt, like the old hermits of the Thebaid, as a sign of sanctity."

A similar obscuration and perversion came over the doctrines and practices of education. Bacon is often quoted as observing that the past "ever deserves that men should stand upon it for a while to see

which way they would go; but when they have made up their minds, they should hesitate no longer, but proceed with cheerfulness"; and I have thought it not unfit to recall so much of the distant past for the better understanding of the present condition of educational and sanitary relations, to the consideration of which our subject now brings us.

The first centuries of the new era were preparing the way for the more recent triumphs of both education and sanitation.

Education, as a central and all-embracing agency in modern progress, employs all beneficial science and art, and comprehends all that belongs to man's right development.

For his rectitude, education enforces the precepts of morality; for his bodily and mental health, the precepts of sanitation. According to Sydney Smith's aphorism, "It is noble to seek truth, and it is beautiful to find it"; and we may add, it is godlike to communicate it. Education must promote the seeking, finding, and dissemination of all truth, sanitation included. Not until the chains were broken from education, and it was given full freedom to make use of all proper resources for man's culture, and to consider the adaptation of methods, subjects, exercises, and aims to the age, temperament, in a word, to the nature and environment of the individual, could education itself appear in its true character, and bring forth its proper fruit. In a sickly or feeble nature, or an unwholesome region, education seeks to produce the conditions of health. It declares to every one, in the language of Fuller, that "Only in a strong and clean body can the soul do its message fitly." We can justly apply the words of Parkes, both education and sanitation appeal to man's universal desire for life and freedom; they both "promote efforts for obtaining the most perfect action of body and mind during as long a period as is consistent with the laws of life." In other words, education and sanitation unite in endeavoring to render growth more perfect, decay less rapid, life more vigorous, death more remote. They join in asking, in the language of the poet, —

> "Who would not give a trifle to prevent
> What he would give a thousand worlds to cure?"

Both appeal to the individual and the state for consideration and action on the principles of prevention. Only recently has hygiene been recognized as a science of great intrinsic value. Now physicians, engineers, architects, philanthropists, moralists, and teachers unite in studying to promote it. Statesmen recognize it as a legitimate subject for legislation and administration.

In this country, from the earliest time, here and there advanced and noble minds have indicated an appreciation of preventive medicine. Dr. Toner points out to us the letters from John Clayton, printed in England, bearing date 1688, giving an account of his several observations in Virginia, in which he treats of the air, water, and soil, and indicates the sanitary effect of drainage and the relation of certain diseases to atmospheric conditions. In South Carolina the records of legislation make mention of an Act to prevent the infection of the small-pox in Charleston, in 1738, and in 1744 of an Act in general terms to prevent the spread of contagious and malignant distempers. But it should be remembered that the medical department of the University of Pennsylvania (our oldest school for the professional training of physicians) was not organized until 1765, that at King's (now Columbia), 1768, that at Harvard in 1782, that at Dartmouth in 1796, and at Transylvania in the early years of this century. Our earliest instruction in medicine drew largely on Edinburgh for its inspiration, its doctrines, and its forms. All are familiar with the recent establishment of hospitals and asylums for the relief of either bodily or mental maladies. The medical profession are to be congratulated on the progress they have made in curative medicine, in spite of the opposition of superstition and ignorance. Humanity is their debtor. Not a few of us here will recall how in our time the public was shocked by the proposition to communicate beyond the limits of the medical profession the elements of anatomy, physiology, and hygiene. A great step was taken, some thirty years ago, when Cutter's works were admitted as text-books into the public schools and academies. Since then the attention, both popular and scientific, given to sanitation has increased in geometric ratio.

The true relation of government to public health can only be properly understood by an educated community. "It is not expected," says Dr. Jarvis, "that any action or power of government can directly cause a man to be healthy; but it can work as effectually for this as it can to make wheat grain or an ox to become fat." The mind of man can imagine and the hand of man can commit hardly any crime which would not involve a violation of the principles of sanitation as well as the precepts of morality. The principles of hygiene are closely interwoven with the rights of person and property. On them rests very much of civil legislation and administration. Benjamin Rush said long ago, "I look for a time when our courts of law shall punish cities and villages for permitting any of the sources of bilious and malignant fevers to exist within their jurisdiction." The late English premier declares, "The health of

the people is, in my opinion, the first duty of the statesman"; and Mr. Gladstone is credited with language hardly less emphatic.

Among us the acknowledgment of a governmental relation to sanitation has naturally followed the consideration given by the state to education, and as we have seen, for similar reasons. True, laws have from time immemorial affected life and health, but here a more specific reference is made to that legislation and administration which specially aim at the prevention of disease, and which have resulted in the establishment of boards of health, so as to secure a correct knowledge of the sanitary condition of the people by systems of registration of births, marriages, deaths, and by sanitary inspection. Twenty-two States and a large number of cities have organized boards of health. Their investigations have already reached conclusions of incalculable value to society. Their reports are among the most valuable public documents. The interest these subjects have commanded in medical associations, social-science associations, and this American Public Health Association, furnishes a notable sign of progress. In the form of voluntary action this Association brings together the divers sanitary influences of the country, and tends to harmonize them, and gathers and confirms the results of local effort and organization. Its discussions and papers have done much to disseminate correct ideas of sanitation. Its influence has been specially prominent in devising some fit national action in the interests of public health. Its urgency, emphasized by the appalling destructiveness of the yellow fever, pointing out at once the value and inadequacy of all local effort, called in the comprehensive, co-operative aid of the general government, and we have the National Board of Health crowning all our other civil organizations for sanitary purposes. This board supplements the work of all the State and city boards by contributing to each information collected from all, as well as from the naval, military, consular, and revenue officers of the government, and from the medical and other experts among its correspondents; it also materially strengthens all local efforts to stay pestilence and preserve from disease. Its single function of gathering and disseminating information cannot be duly estimated. It is not creditable to us that there is deficiency or indifference in any portion of the country, but it is gratifying that sanitation is commanding an honorable place in literature, — in newspapers, books, and libraries. Already it has several periodicals devoted to its promotion. Specially notable are the series of "Health Primers," published in a style available to the largest number, treating such topics as "Our Homes," "The Mouth and

Teeth," "The Throat and Voice," "Hearing, and How to keep It," "Long Life, and How to reach It," "Summer and its Diseases," "Winter and its Dangers," "Sea-Air and Sea-Bathing," "Preventable Diseases," "The Art of Nursing," "School and Industrial Hygiene."

After all, we cannot claim to be more than ready for a good start. Much has been accomplished if we are prepared as a people to see what we need, and to supply ourselves systematically and adequately. Sanitation, alike as a science and an art, must be nourished to its utmost vigor. It must bring under observation the facts illustrating every type and condition of soil, of climate, and of population, rural and urban. Escott remarks that there are three kinds of authority universal in England, —*first*, that relating to pauperism; *second*, concerning the highways; *third*, sanitary authority: and eminent authors, while showing the vast progress in securing sufficient and wholesome food and air and better lodgings for the poor and more healthy homes for the rich, affirm that the whole work of sanitation comes short of its full and complete results for want of better understanding and appreciation by the people generally.

Canon Kingsley arrests himself in the midst of a half-plaintive, half-poetic strain to pertinently ask, "Why should not the experiment be tried of teaching the people something about the tissues of the body, their structure and uses, the circulation of the blood, respiration, chemical changes in the air respired, amount breathed, digestion, nature of food, absorption, secretion, structure of the nervous system? Why should not the art of keeping one's self alive and well be a part of technical education?"

Each commonwealth should not only have its State board of health, but local city, county, town, parish, or district board, according to its civil subdivision. Sanitarians, like educators, must believe in and affirm the righteousness of their cause. They alike must seek and accept all co-operative endeavors, whether public or private. There should be clear, definite, and mutual understanding. The friends of progressive sanitation in urging the action of the State must show that they seek not only what is right and legitimate, but what is expedient and promotive of personal and public welfare. It would seem that their arguments must prevail, even if driven to the lowest plane of reasoning. Dr. Farr, in taking an economic view of society, set down the minimum value of the population of the United Kingdom — men, women, and children — as upon an average not less than some £159 a head. No one can fail to see that as you increase the number of healthy persons, or diminish the days of sickness and the periods of dependence, you add so much to national wealth. Admit

an epidemic or a plague that can only be kept out by proper legislation and administration, and government action may be fairly held responsible for the pecuniary losses incurred. This class of facts must be accumulated and iterated and reiterated for the benefit of those who object to paying a slight tax for sanitary purposes. The legislation of the several States, and the decisions of the courts, leave no doubt that every child among us inherits the right to an education, the right to proper food, clothing, and shelter, and the necessary medical care when sick. Dr. Jarvis has shown that the strength of the state is the sum of all the effective people, deducting all the personal incumbrances, sicknesses, disabilities, and imperfections. From twenty to seventy is the period of maturity and efficiency. The labors of these fifty years create substance sufficient not only for the support of the worker of that time, but for the early years of youth, and also the ordinary period of decrepitude after seventy.

According to the precepts of political economy, man and nature are the partners in the production of wealth. Nature contributes the raw material, but man discovers, manipulates, and utilizes it, thus contributing a far greater element of value than nature. So far, therefore, as man's part is diminished by reducing the amount or efficiency of his activity, the result is correspondingly reduced.

The humane considerations in behalf of sanitation, as well as the beneficent results of sanitary efforts, should be steadily kept in view, and a knowledge of both universally disseminated.

What a confession was that of the English war minister, that their first army in the Crimean war was lost by unsanitary conditions, and the second saved by the application of sanitary science, returning from those death-stricken regions in better health than it had ever been in barracks at home!

French military and colonial sanitation has a similar illustration. In Algeria, three sets of troops had been decimated, and three sets of colonists swept away by disease; but by well-conducted sanitary work the conditions were altered and a seat of health established in that settlement, the birth-rate rising above the death-rate, children becoming robust and healthy, and the military force being in as good condition as at home.

No less forcible are the illustrations brought from experience in connection with great epidemics. If it was true, as some have asserted, that the great fire of London was necessary to purify the city from the seeds of the great plague, modern sanitary applications have rendered such desolation no longer necessary. Prof. Zidekauer, consulting physician to the emperor of Russia, comparing the

treatment of the cholera in St. Petersburg during its ravages in 1836, 1848, and 1855, with that in 1866, affirms that in the first three attacks from forty-seven to fifty thousand were struck with the disease, of whom fifty per cent died. In the epidemic of 1866, from fifty-seven to sixty thousand were affected with premonitory symptoms, but under the improved treatment of advanced sanitation only about five per cent died. All are familiar with the fact that even among more favored conditions of society there was, a century ago, an average life of thirty years' duration, while now the average length of life in like circumstances is fifty years. Boards of health and sanitarians in our own country are, year by year, bringing about results which must fully vindicate the principles they uphold; as for instance the reported reduction of the death-rate in Michigan, the reduction of the death-rate of infants in New York City, the general control of typhoid fever and scarlet fever, the limitation of the yellow fever in the last year of its recent terrible prevalence, and the success of the quarantine of New York City, the story of which reads like a romance. Nor should we forget manifold other results of their endeavors, — such as the improvement in tenement houses, in the drainage of soils and sites productive of consumption and of malarial fevers, or the success with which they are enforcing upon architects the doctrine that (in the language of Bacon) "houses are built to live in and not to look on; therefore let use be preferred before uniformity, except where both may be had." Not less should we forget what has been done for the regulation of abattoirs and of systems of water supply, drainage, and sewage, of market inspection, and interference with the sale of adulterated and other unwholesome foods. It is to be hoped that by the aid of their sound sanitary counsels, the people of Memphis, by their good sense in future municipal administration, may rejoice that their city shall be known as the city of health, and not as the city of desolation.

Sanitarians may well consider what vast agencies for the promotion of health, educational systems and institutions of education may be. Their purpose is to instruct and train every child in the land, not omitting any, whether blind, deaf and dumb, or feeble-minded, if not too weak to be instructed. A most intimate relation exists between sanitation and the administration of education. In boarding schools the entire time and condition of the youth are under the teacher's direction, who should be too well informed to permit any fault. Rarely, however, does any considerable period elapse during which some one of these institutions is not invaded by disease, owing to sanitary neglect, or worse, to sanitary criminality; and the facts and

their lessons are withheld from others, lest the attendance in the future should be reduced. How terribly has one of our most excellent colleges been recently stricken, not because the president and faculty were not able and learned men devoted to their work, or because they lacked skill in understanding all the conditions needful to the healthful culture of the promising young men committed to their care by trusting and devoted parents, but solely because the specific responsibility for the grounds and buildings did not enforce proper sanitary conditions! Sanitary subjects should have a larger place in schools of medicine, engineering, and architecture, that all possible may be done to advance the qualifications of experts, and to keep their art and science up to the very advance line of human acquisition. Dr. Bowditch affirmed in 1876, after a correspondence on public or private hygiene with sixty-two of our universities and colleges, exclusive of medical colleges, that, (1) instruction in public hygiene and state preventive medicine is wofully neglected; (2) on private hygiene only about one third of the colleges give any instruction; (3) a full special course of instruction on either of the above themes is almost unknown; (4) but incidentally, in connection with some other not necessarily allied subjects, the topics are treated by about three fourths of the colleges, while one fourth of them do not even perform this small duty in this most important matter. The attention given to the gymnasium and the physical condition of the students at Amherst by Prof. Hitchcock is hardly duplicated in this country.

Next to our medical schools, the universities and colleges for general culture should lead the educational advance in sanitation. In England already the Universities of Oxford, Cambridge, and London are active. Much is expected of the new University of Victoria. Cambridge, not having the legal right to grant a diploma, gives a certificate testifying to competent knowledge of what is required for the duties of a medical officer of health. The examination precedent requires (1) a knowledge of the principles of physics and chemistry, methods of analysis, the use of the microscope in ascertaining the condition of air and water, reference to ventilation, water supply, drainage, construction of dwellings, disposal of sewage and refuse; and (2) a knowledge of the laws relating to public health, sanitary statistics, origin, propagation, pathology, and prevention of epidemic and infectious diseases, effects of overcrowding, vitiated air, impure water, and bad or insufficient food, unhealthy occupations and the diseases to which they give rise, water supply and drainage in reference to health, nuisances, and distribution of diseases.

This attention to sanitation in colleges, universities, and professional schools should assure among our people of culture, in whatever profession or occupation, a fair measure of sanitary knowledge, as had the learned classes in Judæa and Egypt. But all this will be comparatively in vain without instrumentalities for the universal dissemination of its facts, precepts, and benefits. Here especially does education enter into the most cordial relations with sanitation. Education alone has the men and women and instrumentalities by which this work of informing the people can be successfully and adequately prosecuted. Every parent may educate his child as he chooses. Institutions may be freely organized on private or religious or corporate bases; but in order that none of the people may in any sense perish from lack of knowledge, every State and Territory — except Alaska, where there is no law — has a school system, with an executive officer at its head. Each State and Territory has a school code, aiming to put a qualified teacher in every school; and in control over teachers and schools, proper officers as directors, trustees, or superintendent are brought into relation with the executive head for the State. On these systems of instruction over eighty millions of dollars are annually expended. The corps of school officers has never been enumerated. The supervisory and inspecting work is generally compensated, but the great number of this vast army of school officers, generally choice men in their several places, do their work without pay. Rarely can an honest-minded man perform these duties and not find himself growing to do his very best for the precious youth affected by his administration; and as a consequence, laying aside prejudice, unfounded notions, and opinions not warranted in fact, he will not be indifferent to the conditions affecting health. It must be put down to the credit of these officers that they have given American children, as a rule, houses for schools not elsewhere excelled, and they have sought steadily improvement in school architecture and in the qualifications of teachers. But the public school officer may not merely promote instruction, or promulgate rules that should render the conditions healthful: his responsibility is fully met only when such conditions are beyond all question in agreement with the principles of sanitation. In addition to this, he has the power to determine how far subjects of hygiene shall be taught in the several departments and grades, and how far physical exercises promotive of health shall be introduced.

How often the young man or young woman comes through a particular course of training with the least possible knowledge of the simplest principles of hygiene as they apply to the person, the family, the school, or community!

On the theory of the friends of universal education, there would be necessarily from one fifth to one third of the entire population under instruction at any given time during the school period. What a responsibility have school officers and teachers in the entire control of so much of the life, during these formative years, of our entire population! How sedulously should they consider the heating, lighting, and ventilation of the schools, and the seats and desks of the pupils; in a word, all the influences at work! It must be confessed that there are school officers who hold their places in comparative ignorance of the principles of either education or sanitation. As a result, many school-houses have been erected and many teachers certificated without regard to fitness. Under their direction, houses have been built with public money that have no proper provision for air, either in amount or quality. They have allowed schools to receive and communicate diphtheria, scarlet fever, small-pox. They have permitted unhealthy conditions to multiply around schools until from them has gone sickness to desolate neighborhoods. They should be held responsible for all the unnecessary myopy, curved spines, and infection due to their ignorant or negligent administration.

Right principles of pedagogics will accord with right principles of hygiene. School supervision — which has been taking on scientific form among us for the last fifty years, and has been worked with such incalculable effect to promote the universal instruction of our youth in intelligence and virtue, and the improvement of teachers, school-houses, and methods — should be prepared and required to take special account of sanitation. Sometimes it may find essential the addition of the physician or sanitary engineer, or the woman trained in hygiene. As fast as science is admitted into the administration of human affairs, whether educational or sanitary, man's early life and school days will receive special attention. Diseases and other evils will be traced to their causes, and as far as ascertained to be affected by or affecting school life, will be corrected.

The Bureau of Hygiene of the city of Brussels, Belgium, has just sent out a bulletin on infantile hygiene, pointing out that most of the infants who die are the victims of ignorance, routine, and prejudice. The office adds: "In order to diminish the considerable mortality which desolates and impoverishes at the same time the family and society, it is important to disseminate some elementary knowledge of infantile hygiene, so indispensable to mothers, whose solicitude must be relieved by the teachings of science and experience."

Recently a congress of school physicians was held in Berlin, endeavoring in its discussions to apply the principles of sanitation to

the principles of pedagogics, and to determine how far the one should be modified by the other. The congress considered (1) whether it is best to cultivate mathematics and languages together or separately; (2) whether there should be afternoon sessions of schools; (3) how far pupils should participate in the work of their parents, what exercise should be taken after dinner, whether there should be any intellectual work after supper; (4) what liberty should be given pupils in the selection of gymnastic exercises, and whether girls should use gymnastic exercises after ten, whether even the most talented and healthy pupils should be allowed to take individual lessons in addition to school work, and whether either the laws of health or of culture would permit pupils during their school attendance to participate in parties, balls, and like excitements.

In the recent international educational congress at Brussels, fifteen papers on hygiene in schools were presented by specialists from Belgium, France, Great Britain, Hungary, Holland, Russia, and Switzerland; still other papers were presented in substance. Long and earnest discussions followed, and certain declarations were made: as for instance, (1) that class-rooms should be lighted on one side only, to the left of the scholars, and so arranged that all the seats should be fully and equally lighted; (2) that for lighting evening schools, lamps were preferred; (3) that the size of a class-room for fifty pupils (the extreme number) should be about thirty feet by twenty-four and a half feet; that attention should be given to sanitation in school supervision and inspection.

In order to promote the statistical researches respecting the influence of schools on the physical development of children, they urged that the example of Belgium should be extended, and for this purpose advocated a system of international exchange of documents and information relating to scholastic hygiene. With regard to kindergarten and infant schools, they considered the importance of preventive medicine and care, and of attention to nourishment. They give utterance in reference to play-grounds, physical exercises, school fittings, and all that concerns the school that may affect the health of its pupils.

Indeed, a very large number of investigators in this and other lands are now specially active in tracing all the relations of education to disease. We are shown how defective light or unsuitable positions may injure sight, how myopy increases with study. Dr. Cohn investigates the size of letters and their proper distance from the eye, and the proper distance of the printed page or the blackboard from the eye. Our attention is called to color-blindness. The students of

insanity are making records for its prevention as well as its cure. The attempt is made to study scientifically the psychological development of mind from infancy to age in all conditions. Nor are these inquiries undertaken any too soon, in view of the new problems of life suggested by such facts in our modern civilization as the dying out of families and the increase of insanity.

A great step could be taken immediately by giving sanitation its proper position in our two hundred normal schools, with their fourteen hundred instructors, their forty-one thousand students, sending out annually their thousands of professionally trained teachers. The influence of such an effort would be greatly increased by giving sanitary subjects proper consideration in the hundreds of teachers' associations and the thousands of teachers' institutes held throughout the land.

It may be here remarked, for the credit of schoolmasters, that before boards of health existed, the American Institute of Instruction in 1831 undertook to provide a plan for a village school-house, giving the proper number of cubic and square feet for each occupant, and specifying proper means for ventilation. The next year they declared that among the most prominent defects in the schools of our country was the want of spacious and convenient school-houses. Horace Mann added to his first report on education a supplement in which he discussed, with his usual vigor, school architecture.

The United States Bureau of Education during the last ten years has published articles, chiefly original, on the condition of medical education, past and present, on school-room diseases, on the relation of education to insanity, on the vital statistics of college graduates, on vital statistics derived from the Federal census reports from 1800 to 1860, on free rural sanitaria for the poor in summer, and on vacation colonies for sickly school children, by Drs. Nathan S. Davis, J. M. Toner, Edward Jarvis, Charles Warren, and Prof. Virchow. The Bureau in its annual reports has always paid some attention to school hygiene. It has collected information respecting hospitals and boards of health, for which it has been thanked by the American Medical Association. It has always advocated the establishment and cordial support of State and city boards of health. It has published special pamphlets recently respecting schools of nursing, schools of cookery, and rural school architecture, and stands ready now and hereafter to aid in every proper way the direction of the public intelligence to the conservation and increase of public hygiene.

Bring up to a proper standard the information, the theory, and the practice of those who direct our public schools; advance the three

hundred thousand teachers of the land to the full discharge of their duty with respect to sanitation in the teaching and training of our youth, and they would create public sentiment that would leave no excuse for the shortcomings of sanitary experts, either in the breadth or accuracy of their researches and inferences, or the efficiency of their administration. There would be no longer a lack of a satisfactory system of registration of marriages, births, and deaths in any State or Territory. Physicians would not fail to make sufficient record and report of diseases. The community would not fail for opportunities to know as accurately and fully as need be the usual or special causes operating to prevent disease, either mental or bodily. Business and professional men would be warned against the methods and business hours that hasten sickness or bring on decay and death. Apparatus and systems of heating, lighting, and ventilating, so often fostering disease, would be banished from homes, churches, schools, and places of pleasure or labor. The dust, heat, effluvia, or other conditions, so often destructive of life in certain mechanical industries, would be reduced to the minimum of evil, and all possible remedies applied. Gradually there would disappear alike from city and country those regions of filth, over the entrance to which all who approach might fitly read, as Dante read on the infernal gate,

"All hope abandon, ye who enter here."

There would be sought out and removed those sources of disease that conceal themselves in cleanly appearance, but send out the fatal diphtheria or fever. The communication of contagion by commerce or travel or social intercourse would be understood and prevented. I need not pause to show intelligent religionists or moralists that as sanitation is advanced by educational aids towards its proper position, their assaults on vice and crime will be enforced by arguments drawn from mental and physical health or disease. "Sanitation points to the rum-shop and brothel as the place for the generation and dissemination of contagion. It shows that an ill-drained, overcrowded residence may generate disease and intensify tendencies to scrofula and phthisis"; and morally, adds Dr. Fraser, modesty must be unknown, and decency out of the question.

The public mind in quarters is greatly agitated about the sphere and condition of woman. In all matters of health, no one will question her equal interest with man. Not a few of her own sex in our country have become alarmed at the increase of various forms of nervousness and the multiplication of sickness. Here, therefore, is an unquestioned sphere for the exertions of woman. At the recent

sanitary congress at Exeter, speaking of woman as a sanitary reformer, Dr. Richardson, felicitously citing Solomon's description of a good wife, "who worketh willingly with her hands," said, "She is an early riser, and sees that every one has an early breakfast. She knows that where there is poverty there can be neither health nor happiness. She is watchful and busy. 'She looketh well to the ways of her household, and eateth not the bread of idleness.'" He also called to his aid Xenophon's dialogue treating of the household and its economies, in which Socrates and Critobulus are made to concur that the ordering of a household should properly be named a science; in which Socrates speaks of a certain man called the Good, who affirms that while performing his duties as a citizen he could safely be absent, for his wife, whom he had instructed, could order well enough what was wanted there. Dr. Richardson declares that sanitary science must have its true birth in the home. The man is abroad; disease threatens the home, and the woman is on the spot. He would give woman that training by which she shall be enabled to direct domestic life, that she may exert all her influence for the prevention of disease. He believes that this training is simple and practicable. She must be taught the laws of lighting, heating, and ventilating the house, the nature and effect of food, the chemistry of the kitchen, the art of cookery. She must understand and resist those mistakes of marriage which promote disease; she must comprehend the child and its training; she must master domestic economy, and be an educated nurse.

Need I add that the proper, or, if you please, ideal union of education and sanitation would not be expected to annihilate pain or disease or death, but to reduce them to their minimum? The physician would practise preventive as well as curative medicine. His directions would be more intelligently followed, and his labor more cordially rewarded. The approach of new or modified disease or great epidemics would be at once known and speedily antagonized by all the resources at the command of the nation, the state, the city, the family, the individual.

THE LOSS AND RECOVERY OF CLASSICAL MANUSCRIPTS.

Part II.

WILLIAM S. LISCOMB.

Most of the manuscripts brought to light at the revival of learning were discovered in religious houses or churches. This of course resulted from that earlier phase of mediæval civilization which of necessity threw learning chiefly into the hands of the clergy and monks. Society then, so far as men of ability were concerned, was divided into two classes, — those who entered the service of the church, and those who devoted themselves to politics and the profession of war. In this condition of affairs, "the monasteries," Ginguené has well remarked, "had become an asylum to which not only piety but the simple love of peace, in the midst of that eternal fracas of arms, conducted the majority of men who preserved any love for study."[1] Many of the monasteries contained a *scriptorium*, or copying-room, in which transcriptions of books were made. The amount and kind of work done, however, depended entirely on the temper of the individual abbot, and this in many instances was eminently unfavorable to literature. Even when a considerable degree of enthusiasm prevailed, as in the case of Cassiodorus at Vivariense, the chief attention was given to ecclesiastical writings, the classics occupying a wholly inferior position.[2] About the year 1000 A. D., an intellectual quickening of considerable extent took place, due partly, perhaps, to the introduction of cotton paper into more common use, partly to the influence of Arabic learning, which was then at its height, partly to the elevation of the celebrated scholar and patron of learning Gerbert to the papacy in 999.[3] While the movement lasted, a lively interest in the works of classical authors was manifested. But it was of no permanent duration, and in the course of the next two centuries wholly died out. The rise of the preaching friars, calling to themselves the attention of all Europe, greatly impaired the prosperity of the older orders, among whom chiefly the literary spirit existed.[4] The influence of the crusades, too, was extremely unfavorable to the intellectual activity of the church. The rich vestments, relics, and costly vessels, brought back by the

[1] Vol. I. p. 44.
[2] Tiraboschi, Vol. III. pp. 33–42.
[3] Muratori, Vol. VII. pp. 109–111, Diss. 43.
[4] Tiraboschi, Vol. IV. p. 128.

crusaders from the East, introduced new objects of desire to the clergy and monks of the West, and the rage for collecting them soon obliterated the thought of all else. For such paltry trifles the more precious relics of a nobler antiquity were forgotten. These influences, joined with the decline of discipline and the immense increase of wealth in the religious establishments, led to the almost total neglect of literature, and rendered the thirteenth century the darkest and most barren of the Middle Ages. Europe for the time being, to use the language of Heeren, was converted into a boundless desert in which scarcely a solitary flower blossomed here and there.[1] The same, so far as the church was concerned, was practically true of the fourteenth century. During this period the sacrifice of many of the ancient authors took place, and books were thrown aside into garrets and old chests, or buried beneath heaps of rubbish in lumber-rooms and cellars, slowly to corrode with age and neglect, or to be eaten up by vermin. To how narrow a chance they were in this way reduced, may be seen in the case of Æschylus, Sophocles, Athenæus, Lucretius, Hesychius, Varro, Suetonius, Manilius, Catullus, Tibullus, Apuleius, Festus, Cornelius Nepos, Vitruvius, Velleius, Solinus, Arnobius, the "Scriptores Historiæ Augustæ," Vibius Sequester, Martianus Capella, Rutilius Namatianus, Priscian, the "Satires" of Petronius Arbiter, Macrobius's "Saturnalia," Livy's first Decade, Cæsar's "Bellum Civile," Tacitus's "Dialogus de Oratoribus," "Germania," and "Annals," the "Institutes" of Gaius, Cicero's "De Natura Deorum," "De Legibus," "De Divinatione," "Brutus," and "Orator," all the amatory poems of Ovid, Festus's abridgment of Flaccus's "De Verborum Significatu," Varro's "De Lingua Latina," almost all the "Fabulæ" of Hyginus, the "Controversiæ" of Seneca the Elder, the abridgments of Valerius Maximus by Julius Paris and Januarius Nepotianus, Celsus's "De Medicina," Seneca's "Satire on the Apotheosis of Claudius," the "Compositiones Medicamentorum" of Scribonius Largus, the "Silvæ" of Statius, Frontinus's "De Aquis Urbis Romæ," the "Octavius" of Minucius Felix, the "Fragmenta Ulpiani," the "Panegyrici Veteres," Lactantius's "De Mortibus Persecutorum," Firmicius Maternus's "De Errore Profanarum Religionum," the "Ars Grammatica" of Diomed and almost all of Carisius, the "Chronicles" of Sulpicius Severus, the grammatical works of Cledonius, the "Mythology" and "Virgiliana Continentia" of Fulgentius, the legal work "Consultatio" of the time of Theodosius II., and probably the "Argonautica" of Valerius Flaccus. These are each

[1] Einl., §§ 144, 172–174.

traced back to a single manuscript or archetype which escaped destruction. Had this perished, they would now be included in the list of works hopelessly lost. Similarly, of Tacitus's "Agricola" and the grammatical writings of Donatus only two texts survived.[1]

The utter death of literary sentiment in the monasteries during this age is well shown in the account of Boccaccio's visit to Monte Cassino, near the middle of the fourteenth century: "Desirous of seeing the collection of books, which he understood to be a very choice one, he modestly asked a monk — for he was always most courteous in his manners — to open the library, as a favor for him. The monk answered stiffly, pointing to a steep staircase, 'Go up; it is open.' Boccaccio went up gladly; but he found that the place which held so great a treasure was without door or key. He entered, and saw grass sprouting on the windows, and all the books and benches thick with dust. In his astonishment he began to open and turn the leaves of first one tome and then another, and found many and divers volumes of ancient and foreign works. Some of them had lost several sheets, others were snipped and pared all round the text and mutilated in various ways. At length, lamenting that the toil and study of so many illustrious men should have passed into the hands of most abandoned wretches, he departed with tears and sighs. Coming to the cloister, he asked a monk whom he met, why those valuable books had been so disgracefully mangled. He answered that the monks, seeking to gain a few *soldi*, were in the habit of cutting off sheets and making psalters, which they sold to boys. The margins, too, they manufactured into charms, and sold to women. So then, O man of study, go to, and rack your brains. Make books that you may come to this."[2]

Despite all vicissitudes, however, several of the ancient authors were preserved and to some extent read during the entire period of the Middle Ages. In this class are included pre-eminently Virgil, also Ovid, Lucan, Juvenal, Statius, Horace, Aristotle,[3] Plato, parts of

[1] See Teuffel under the names of these authors, and Edinburgh Review, January, 1873.

[2] Symonds, pp. 133, 134; Tiraboschi, Vol. V. pp. 178, 179; Ginguené, Vol. III. pp. 14, 15; Longfellow's Dante, note to Par. XXII. l. 74.

[3] On the study of Aristotle in the Middle Ages, see Heeren, Einl., §§ 111, 145, and Muratori, Vol. VII. pp. 171, 174, *seq.*, and 182, *seq.*, Diss. 44. The commentaries on Aristotle by Ammonius in the fifth century, and by Simplicius and Boethius in the sixth, the existence of the Athenian schools of philosophy till the time of Justinian, and the translation of Plato by Boethius, taken with the facts mentioned by Heeren, sufficiently prove the continued existence of these great masters of Grecian thought, though known in the West almost exclusively through Latin translations.

Cicero, and probably Sallust, Terence, considerable portions of Seneca, and a few others.[1]

Besides these, certain works appear at intervals along the barren centuries of the dark ages. The speeches of Cato the Elder were preserved till at least the fourth century. Tacitus existed at the close of this century and the beginning of the next, and again in the ninth, Rudolph of Fulda being apparently the only German or Italian historian of the latter period who was familiar with his works. Livy's first Decade is also known to have existed at the end of the fourth century, but as his works are not quoted after Priscian in the sixth, Niebuhr infers that the lost books were not read during the entire Middle Ages.[2] Cicero's "Pro Flacco" is mentioned by Macrobius about the beginning of the fifth century, and seems to have been imperfect even then.[3] Censorinus's "De Die Natali" is alluded to by Cassiodorus in the sixth, and Dioscorides and the recent writer Marcianus Capella are spoken of a little later, in the time of Gregory the Great.[4] Pliny was known in the seventh century, in the time of Isidore.[5] Charlemagne in the latter part of the eighth is said to have been familiar with "the classical poets,"[6] — a somewhat ambiguous term, though probably limited to those enumerated above. Alcuin mentions as then in the library of York, besides a list of twenty ecclesiastical writers, the works of Boethius, Aristotle, Cicero, Pompeius Trogus, Pliny the Elder (the "Natural History"), and Lactantius; the Christian poets Sedulius, Juvencus, Paulinus, Arator, and Fortunatus; the classical poets Virgil, Statius, and Lucan, and the grammarians Probus, Phocas, Donatus, Priscian, Servius, Euticius, (Eutychius?) Pompeius, (Festus?) Commenianus, (Cominianus?) and "very many others, masters in the art of discourse."[7] It was at this time that the Roman classics began to come into Germany, including, besides several already mentioned, the works of later authors, such as Macrobius's "Saturnalia," Capella's "De Nuptiis Philologiæ et Mercurii," both of them much read in the schools of the Middle Ages, Boethius, Cassiodorus, and Isidore's "Etymology."[8] The "Institutions" of Quintilian, Donatus's "Commentary on Terence," Cicero's "In Verrem," "De Oratore," and "De Republica" were known in Italy in the time of Benedict III., at the middle of the ninth century (855). Of the Quintilian and "De Oratore" only portions

[1] Symonds, pp. 65, 66.
[2] Westminster Review.
[3] Teuffel, § 166, 27, 1.
[4] Tiraboschi, Vol. III. p. 37; Heeren, Einl., § 56.
[5] Heeren, Einl., § 64.
[6] Ibid., § 55.
[7] Heeren, Einl., § 77, note 1.
[8] Ibid., § 76.

were to be found in France, at least in the vicinity of Ferrières.[1] The monastery of Bobbio about the same time contained the works of Cato, (Dionysius?) the poems of Arator, Fortunatus, and Juvencus, and the poetry and letters of Paulinus.[2] In the tenth century Catullus[3] was in the library of the chapter at Verona, though it was soon afterwards lost sight of, and Persius evidently existed at Tegernsee. The so-called "Liber Invectivarum Ciceronis in Sallustium" is spoken of about the same time.[4] At the close of the century the learned Gerbert, afterward Pope Sylvester II., read Cicero's "In Verrem" and "De Republica," was familiar not only with Sallust, but also with Cæsar and Suetonius, and took means to secure Manilius's "De Astronomia" and Victorinus's "De Rhetorica."[5] The "Hortensius" of Cicero, now lost with the exception of a few fragments, was extant in the eleventh century at Reichenau, and in the twelfth in a monastery of Western France.[6]

Among the authors read at Paderborn in the eleventh century, besides Horace, Virgil, Sallust, and Statius, occurs the name of Crispus, who must have been one of the orators Passienus Crispus or Vibius Crispus. That it was not Sallust appears from the language, "Crispus ac Sallustius," in which he is mentioned.[7] Priscian, Quintilian, and Cicero were taught at Cambridge on the revival of that university about 1110.[8] Cicero's "De Re Agraria," "Philippics," and "Letters," (but which?) and Aulus Gellius's "Noctes Atticæ" existed in 1150.[9] Petronius is conjectured to have been entire at that time, as some of the lost passages are quoted by John of Salisbury. In 1212 the cathedral of Novara possessed Boethius, Priscian, the "Code" of Justinian, the "Decretals," and the "Etymology" of Isidore.[10] Later in the thirteenth century, Roger Bacon was well acquainted with Cicero and Pliny the Elder, as well as Seneca, Horace, and Ovid.[11] The monastic library of Ramsay at the same time contained Aristotle, Arrian, Boethius, Claudius, (but which out of the dozen or more who bore this name?) Dionysius, (the so-called works of the Areopagite, or Dionysius Cato?) Donatus, Horace, Josephus, Justin, Lucan, Martial, Macrobius, Orosius, Ovid, Plato, Priscian, Prudentius, Seneca, Sallust, Solinus, Terence, and Virgil.[12] Giovanni Villani, who visited Rome in the jubilee of 1300, read there Valerius

[1] Heeren, Einl., §§ 91, 93; Ginguené, Vol. I. p. 74; Muratori, Vol. VII. pp. 84, 85 Diss. 43; Maitland, p. 50.
[2] Muratori, Vol. VII. p. 69, Diss. 43.
[3] Teuffel, § 211, 9.
[4] Maitland, p. 504.
[5] Heeren, Einl., § 101; Muratori, Vol. VII. p. 111, Diss. 43.
[6] Teuffel, § 173, 5, 2.
[7] Maitland, p. 141.
[8] Heeren, Einl., § 130.
[9] Maitland, pp. 175, 176.
[10] Symonds, p. 128.
[11] Heeren, Einl., § 147.
[12] Merryweather, Bibliomania in the Middle Ages.

Maximus, and the same historian was one of the authors that helped to fire the enthusiasm of Rienzi.[1] Bartolino da Canullo, who on the death of Giovanni de' Buonandrea in 1329 succeeded him as professor of rhetoric at Florence, yearly read through Cicero twice with his pupils, beginning after the feast of St. Luke. This, Tiraboschi thinks, was the "Rhetorica ad Herennium," then attributed to Cicero, or the "De Inventione," as the "De Oratore" could scarcely have been known at that time.[2] Petrarch, besides the works discovered by him, possessed several orations of Cicero and at least a part of the "Academica." He borrowed the "Philippics" and "Pro Milone" from Lapo da Castiglionchio, who appears to have found them, and the "Tusculanæ Disputationes" from Cratto of Bergamo, who seems to have had the same good luck in the case of the latter.[3] Mention is also made by him of Ennius and Valerius, but whether by the latter is meant Martial or Valerius Maximus is uncertain.[4] Cicero's "Letters" are sometimes said not to be alluded to between the time of Lupus of Ferrières in the ninth century and their discovery by Petrarch in the fourteenth, and from this fact their extreme rarity is inferred. The inference is doubtless correct, though, as we have already seen, isolated traces of them actually do occur during this period.[5] Petrarch also possessed three Decades of Livy, the first, third, and fourth, and in spite of all his efforts could find no more.[6]

These remarks are strictly applicable only to Latin authors and the West. Greek literature, it is true, had perished from Italy several centuries before, though the language continued to be spoken by the rude, common people in the south of the peninsula. A similar state of ignorance prevailed throughout Europe. In the East, however, despite all vicissitudes, neither language nor literature was ever lost, but scholars of greater or less renown flourished during the entire period of the Middle Ages.[7] The royal college of Constantinople lent its patronage to learning;[8] and although this was abolished and its library burned during the iconoclastic fanati-

[1] Ginguené, Vol. II. p. 275; Symonds, pp. 145, 146.

[2] Tiraboschi, Vol. VI. p. 935. In regard to the works of Cicero mentioned at any given time, it is often impossible to speak, as their titles are not always given. Certain of his writings, however, probably the rhetorical, were used in education, and that no doubt during the entire Middle Ages. The compilations of Boethius, Priscian, Donatus, and Cassiodorus were nevertheless more common. Symonds, p. 66. The same uncertainty frequently applies to other authors whose names alone are mentioned.

[3] Tiraboschi, Vol. V. pp. 159–162; Ginguené, Vol. II. p. 426.

[4] Tiraboschi, Vol. V. p. 141.

[5] Teuffel, § 170, 5.

[6] Ginguené, Vol. II. pp. 397, 398.

[7] Muratori, Vol. VII. p. 59, Diss. 43.

[8] Heeren, Einl., § 26.

cism of Leo, a brilliant restoration took place in the following century under the celebrated Photius.[1] This was carried still further by the learned Michael Psellus in the eleventh century, and by Eustathius and his contemporaries in the twelfth. Schools were founded and reformed; the works of ancient authors were collected; the poets, orators, historians, and philosophers were studied and commented upon.[2] The revival of Greek letters in Italy, indeed, was merely an importation of Byzantine learning and its subsequent development in the hands of native scholars. Hence, we cannot speak of the Greek writers who were restored at the age of the Renaissance as having been lost in the same sense as the Latin. They had through various vicissitudes disappeared from the West, but they were all the while known and studied in the East, first in the monasteries, afterwards in the public schools of learning, and were merely shipped thence to Italy.

The movement which began with Petrarch and Boccaccio in the fourteenth century, and was carried on by Coluccio Salutato, Palla degli Strozzi, and others, culminated in the enthusiasm of the fifteenth. A true sense of the value of antiquity had at length taken hold on the minds of secular scholars. The desire to possess new works led them to institute careful search for manuscripts, and the intellectual torpor of the religious orders threw the work almost wholly into their hands.

In 1409 Leonardo Bruni discovered a fine manuscript of Cicero's "Letters" at Pistoia, but the real leader in this great movement was Poggio Bracciolini, the celebrated scholar and papal secretary. Called to attend the Council of Constance in the retinue of John XXII., in 1414, he undertook two years later a journey to the monastery of St. Gall, where he had been informed a large quantity of books existed. Here, to his infinite delight, he found the entire "Institutions" of Quintilian, the first three books and half the fourth of the "Argonautica" of Valerius Flaccus, and the "Commentaries" of Asconius Pedianus on eight orations of Cicero. They were lying in a cellar at the bottom of a tower, foul with dust and age. Up to this time there seems to have existed in Italy no copy of Quintilian except the wretched codex discovered by Petrarch at Florence. The joy of Poggio found expression in a celebrated letter. "I verily believe," he wrote, "that if we had not come to the rescue, he [Quintilian] must speedily have perished. For it cannot be imagined that a man magnificent, polished, elegant, urbane, and witty could much longer have endured the squalor of the prison-

[1] Gibbon, Chap. LIII. [2] Heeren, Einl., §§ 84, 103–106.

house in which I found him, the savagery of his jailers, the forlorn filth of the place. He was indeed right sad to look upon, and ragged, like a condemned criminal, with rough beard and matted hair, protesting by his countenance and garb against the injustice of his sentence. He seemed to be stretching out his hands, calling upon the Romans, demanding to be saved from so unmerited a doom. The books, you must know, were not housed according to their worth, but were lying in a most foul and obscure dungeon at the very bottom of a tower, a place into which condemned criminals would hardly have been thrust."[1] In the monastery of the monks of Clugny at Langres, Poggio also found Cicero's oration "Pro Cæcina," and in various religious houses of France and Germany six others, namely, "De Lege Agraria contra Rullum," "Ad Populum contra Legem Agrariam," "In L. Pisonem," "Pro Rabirio Pisone," "Pro C. Rabirio Perduellionis Reo," and "Pro Roscio Comœdo."[2] These are now in the monastic library of S. Maria Fiorentina at Florence, with the exception of the last three, which have been torn from the volume. At Monte Cassino he discovered, lying forgotten amid the dust, Frontinus's "De Aquis Urbis Romæ," and all the eight books of Firmicius's treatise on "Mathematics," and obtained them to copy. At Cologne he unearthed the "Satires" of Petronius Arbiter, having previously secured a small fragment at Berlin. The Cologne manuscript, nevertheless, must itself have been imperfect, as the works of Petronius are only a heap of fragments at the present day. He also found the "Eclogues" of Calpurnius, Vitruvius's "De Architectura," Priscian's "De Arte Grammatica," Celsus's "De Medicina," Aulus Gellius's "Noctes Atticæ," the "Silvæ" of Statius, Eusebius's "De Temporibus," the "Astronomica" of Manilius, Lucius Septimius, Flavius Caper, Eutyches, and Probus. Aulus Gellius, however, may very probably have been known at this time: a codex of the fifteenth century is still in the Wolfenbüttel library,[3] and it is probable that the work was read about the time of Poggio's discoveries. From its character, too, it would naturally be much prized during the Middle Ages.

With the aid of Bartolommeo da Montepulciano, Poggio discovered Silius Italicus in 1417, Lactantius's "De Ira Dei" and "De Opificio Dei," Vegetius's "Epitoma Rei Militaris," Nonius Marcellus, Ammianus Marcellinus, Lucretius's "De Rerum Natura," Columella's "De Re Rustica," Festus's "De Verborum Significatu," and several

[1] Symonds, pp. 135, 136.

[2] Montfaucon, Vol. I. pp. 417, 418.

[3] Ebert, Zur Handschriftenkunde, Vol. II. pp. 76, 77; Scriptores Latini ad Usum Delphini, *Aulus Gellius*, p. 33.

works of Tertullian. According to Voigt the discovery of Vegetius, Festus, and probably Silius Italicus and Lucretius, which was made at St. Gall, was due to Bartolommeo alone, who, spurred on by Poggio's successes, pursued investigations on his own responsibility. The latter, nevertheless, has generally got the credit of them.[1] Of these authors Silius Italicus, at least, had probably been unknown for centuries. His works were read by Vibius Sequester at the end of the fourth century or beginning of the fifth, but were forgotten during the Middle Ages, and apparently not in the possession of Petrarch. About the same time a manuscript of Cicero's "Letters to Atticus" was discovered at Constance, but by whom is not stated. The work, however, can hardly have disappeared so soon after the time of Petrarch. Similarly a copy of the "Eclogues" of Calpurnius and Nemesianus, and a part of Petronius were found in Germany a few years later, and sent to Matthias Corvinus, king of Hungary, by Taddeo Ugoletti.[2] The Verrine Orations of Cicero were discovered at the same place, and through the influence of Poggio and Leonardo Bruni transferred to Italy.[3] During the period of the Council of Constance, Justin's abridgment of Pompeius Trogus, as we still possess it, was discovered in Spain by the Cardinal of Pisa and sent to Italy. A manuscript containing this work, with date of 1405, is now in the library of S. Maria Fiorentina.[4]

About 1425, Gherardo Landriani, Bishop of Lodi, while searching in the cathedral of that place for certain ancient privileges, found buried beneath rubbish in an old chest a codex containing Cicero's "De Inventione," "De Oratore," "Brutus," and "Orator," and the "Rhetorica ad Herennium." All were written in characters of such antiquity that no one in Milan could read them. Cosmo of Bergamo, however, deciphered and transcribed the "De Oratore," and Flavio Biondo the "Brutus," and from these copies were made and spread over Italy. The "De Oratore" had existed previously to this, but in an imperfect state. The manuscript was subsequently lost, and its contents remain to us only through copies.[5] About the same time Salvianus's "De Providentia Divina" was found in Germany by Gregorio Corraro.[6]

[1] Shepherd, Life of Poggio, pp. 98–101; Tiraboschi, Vol. VI. pp. 178–183; Ginguené, Vol. III. pp. 281–283; Symonds, pp. 134–140; Vespasiano, Vite di Uomini Illustri, Vita di Poggio, in Vol. I. of Mai's Spicilegium Romanum; Teuffel, § 315, 5; Voigt, Wiederbelebung des Classischen Alterthums, p. 137.

[2] Tiraboschi, Vol. VI. p. 187.

[3] Vespasiano, *loc. cit.*

[4] Voigt, p. 134; Montfaucon, Vol. I. p. 417.

[5] Tiraboschi, Vol. VI. pp. 181, 182; Ginguené, Vol. III. p. 286; Symonds, p. 140; Teuffel, § 169, 3, 2; Vespasiano, p. 618.

[6] Tiraboschi, Vol. VI. p. 182.

Previous to 1429 only eight comedies of Plautus were known, namely, the "Amphitruo," "Asinaria," "Aulularia," "Captivi," "Curculio," "Casina," "Cistellaria," and "Epidicus." In that year Nicholas of Treves, who was employed in Germany to receive moneys due to the pope, sent to Rome twelve more; these were the "Bacchides," "Mostellaria," "Menæchmi," "Miles Gloriosus," "Mercator," "Pœnulus," "Pseudolus," "Persa," "Rudens," "Stichus," "Trinummus," and "Truculentus." These are all that have come down to us, some of them in a very imperfect state.[1] The manuscript falling into the hands of Cardinal Orsini, that prelate churlishly locked it up from the learned, and would not allow even Poggio to copy it, though found chiefly through his influence. At length Lorenzo de' Medici induced Orsini to send it to Florence, where it was transcribed by Niccolò Niccoli. His copy is still in the library of St. Mark in Florence, while the original is preserved in the Vatican. A similar incident happened to the manuscript of Tertullian, which Poggio had unearthed at Monte Cassino and which had likewise come into the possession of Orsini, the interference of Lorenzo securing this also for the learned world. In the sixteenth century two other manuscripts of Plautus were discovered, but they supplied nothing new.

Guarino da Verona, though at what date is not said, is reported to have discovered the poems of Catullus in a garret, covered with dust and almost destroyed. He restored, corrected them, and put them in shape to be read, with the exception of a few passages which were too much effaced to be deciphered. Tiraboschi is uncertain whether Guarino was the discoverer, or only the corrector of this codex. The works of Catullus, indeed, have had rather a checkered career. A copy of the single archetype, now lost, from which they have come down to us, was made in the tenth century or earlier. This was read by the French monk Rather, Bishop of Verona, in the library of the chapter in that city in 965. It is said to have been in a very corrupt state. Nothing more was heard of it till the beginning of the fourteenth century, when it was refound, and subsequently read by Petrarch. Twenty years afterwards it again disappeared. A copy of it made in 1375 is the earliest and most valuable manuscript of this author which has reached us. This would seem to indicate that it had once more come to light about the time of Petrarch's death. Since that period it has been hopelessly lost.[2]

[1] Shepherd, *loc. cit.*; Teuffel, § 86; Tiraboschi, Vol. VI. pp. 182, 183; Ginguené, Vol. III. p. 283.

[2] Ginguené, Vol. III. p. 261; Tiraboschi, Vol. IX. pp. 1464, 1465; Teuffel, § 211, 9.

Later in the fifteenth century Porphyrio's "Commentary on Horace," and the "De Re Coquinaria" attributed to Apicius,[1] were discovered through the efforts of that munificent friend of learning, Nicholas V. In 1457 the sole manuscript from which have been preserved Tacitus's "Germania," "Dialogus de Oratoribus," and the fragment of Suetonius's "De Grammaticis et Rhetoribus," was found at the monastery of Hersfeld and brought to Italy by Henoch of Ascoli,[2] perhaps in a copy made by himself. The principal manuscript of the "Histories" of Tacitus was written at Monte Cassino between 1053 and 1087, but when it was discovered is not apparent. The first six books of the "Annals," long regarded as lost, were brought to light in the monastery of Corvey, in Westphalia, in 1508, and being carried to Rome came into the hands of Cardinal de' Medici, afterwards Leo X. The codex is now preserved in the Medicean Library in Florence. The last third of the "Annals" is also from a Medicean manuscript, the same which contains the "Histories" just mentioned.[3] The story that Sulpicius Severus incorporated in his own history certain of the lost portions of Tacitus and then destroyed the original, rests on no authority which can command our belief. A similar charge has been brought against Leonardo Bruni, — that supposing himself to be in possession of the only copy of Procopius's Greek history of the Gothic war, he translated it into Latin and published it as his own. This charge is neither affirmed nor denied by Tiraboschi, who merely alludes to it as having been made by Mazzucchelli. Ginguené, however, contents himself by calling the work a translation or rather imitation of Procopius.[4]

No one of the period of the Renaissance deserves greater praise for the discovery of manuscripts than the Florentine scholar Niccolò Niccoli. Although he himself seems not to have engaged in actual search, he furnished means, information, and enthusiasm in that important work to all the scholars of his time. According to Vespasiano, Tertullian and Cicero's "De Oratore" were found through his efforts and at his own expense. This may refer merely to the cost of bringing them to Florence, as otherwise it seems inconsistent with what has already been said. Learning that a complete manuscript of Pliny's "Natural Histories" existed at Lübeck, he did not rest content till he had seen it conveyed to Florence.[5]

[1] Tiraboschi, Vol. VI. p. 212. [2] Teuffel, § 329, 4.
[3] Teuffel, § 329, 4; 332, 5; 333, 4; Heeren, Einl., § 92; Shepherd, p. 104.
[4] Tiraboschi, Vol. VI. p. 1021; Ginguené, Vol. III. p. 277.
[5] Vespasiano, p. 618; Symonds, pp. 178–182.

The works of Propertius, a manuscript of which was possessed by Petrarch in 1374, seem after his death to have disappeared, and to have remained unknown for over half a century. In the time of Gioviano Pontano they were rediscovered under the casks in a wine-cellar, falling to pieces with dampness and age. The interest awakened by them, in the opinion of Barth who published an edition of Propertius a century ago, led to the institution of more careful search and the subsequent bringing to light of other copies of the work.[1] In 1433, Giovanni Aurispa discovered at Mayence a manuscript of the "Panegyricus" of Pliny the Younger, from which all extant copies have been chiefly derived.[2] The "Itinerarium" of Rutilus Namatianus was found in 1494, but where or by whom is not mentioned by Teuffel.[3] About the year 1500 the "Letters" of Pliny the Younger, which previous to that time had existed in a very imperfect state, were brought from Paris by Fra Giocondo Veronese.[4] Velleius Paterculus was unearthed at the monastery of Murbach in Alsace, by Beatus Rhenanus, in 1515.[5] About 1620 the largest fragment of Petronius Arbiter which we now possess, containing the "Cœna Trimalchionis," was found at Trau in Dalmatia. The manuscript bears date of 1423, and on its publication by Marino Statilio, in 1664, excited a violent literary quarrel throughout Europe, certain scholars denouncing it as a forgery. Its genuineness, however, was soon afterwards established and is now admitted.[6]

The works of Livy, of which we possess only about half a decade more than was known to Petrarch, have been the object of unwearied but fruitless search. Various wonderful stories of their discovery, however, appeared from the fifteenth to the seventeenth century. They had been seen now in Denmark, now in Dacia, now in Norway, now in Arabia, now in the Hebrides, now in Bremen, now in the Sultan's library at Constantinople, now in the Escurial library of S. Lorenzo, now made up into raquet-bats for tennis, of which the artisan had more than twelve dozen still on hand. Yet, according to the stupid narrator of this stupid tale, the scholar who discovered them had not wit enough either to remove the parchment or to copy the text contained on it. These worthless accounts need not be dwelt upon. They may be read entire in the first volume of Tiraboschi.[7]

Of the discovery of many manuscripts of the Latin authors, it is

[1] Scriptores Latini Delph., *Propertius*, Vol. I. pp. 3, 4; Teuffel, § 241, 5.
[2] Teuffel, § 335, 12.
[3] § 447, 1 and 4.
[4] Tiraboschi, Vol. VI. p. 188.
[5] Teuffel, § 273, 5.
[6] Montfaucon, Vol. II. p. 758; Teuffel, § 300, 2; Nisard, Collection des Auteurs Latins, *Pétrone*, pp. iv., v.
[7] Pages 451–456.

impossible to speak from any works now at hand. In a large number of cases, it is probable that no statistics have been preserved. As in the earlier centuries, however, we have proof of the existence of a few at given times, though when and by whom obtained it would be difficult to say. A codex of Lucius Florus with date of 1398 exists in the library of S. Maria Fiorentina, which would seem to indicate that it was among those possessed by scholars during the entire period of the fifteenth century. As the work was much esteemed in the Middle Ages, it may never have been lost. A manuscript of Cicero's "De Finibus Bonorum et Malorum," written in 1406, is in the same library, and also Macrobius's "Saturnalia," written in 1461.[1] The manuscript of Propertius found at Trau, dated 1423, contains also Tibullus, Catullus, and Sappho "Ad Phaonem," and we know that the two former were imitated by Politian, Landino, Marullo, and others in the second half of the fifteenth century. A codex of Cicero's "Tusculans," of 1428, exists at Dresden.[2] Apuleius, Lucan, and the "Commentaries" of Cæsar were published at Rome in 1469,[3] and the "Commentaries" of Servius on Virgil's "Bucolics" at Florence in 1471.[4] Dionysius Cato's "Disticha de Moribus ad Filium" was extensively used as a text-book in the schools of the Middle Ages, and was highly praised by Erasmus. In the fifteenth century over thirty editions were printed.

The revival of Greek as well as Latin learning in Italy began, as we have already seen, with Petrarch, though he himself did little in its service beyond awakening enthusiasm in the minds of others. Previous to his time the works of Greek authors were known to Western scholars only through the medium of Latin translations. In 1363, however, he obtained in Venice, whither they had been brought from the East, several Greek codices of works till then unknown in Italy, among them a fine manuscript of Sophocles. The movement thus commenced was carried forward with zeal by Boccaccio, the latter boasting with just pride that he was the first who, at his own expense, brought Homer and other authors back to Italy, whence they had departed centuries before.[5] This feeling reached its height when the Byzantine professors began to come into Italy at the close of the fourteenth and beginning of the fifteenth century. From that time Greek and Latin authors alike were sought for, read, and interpreted. About 1390, Guarino da Verona visited Constantinople

[1] Montfaucon, Vol. I. p. 418.
[2] Ebert, Vol. I. p. 173.
[3] Heeren, § 42 (body of the work).
[4] Symonds, p. 369.
[5] Tiraboschi, Vol. V. pp. 161, 162.

to study in the school of Manuel Chrysoloras, and on his return brought back with him two chests filled with manuscripts. On the way he was overtaken by a storm at sea, and only one of these survived. It is related that the scholar landed with hair whitened by grief at his loss.[1] In 1423, Giovanni Aurispa brought from Venice to Florence two hundred and thirty-eight manuscripts, among them the history of Procopius; the poems of Callimachus, of Pindar, and of Oppian; the Orphic fragments; the commentaries of Aristarchus (or Eustathius) on the Iliad; all the works of Plato, of Proclus, of Plotinus, of Xenophon, and of Lucian; the histories of Dion Cassius, Diodorus Siculus, and Arrian; the geography of Strabo, and many others hitherto unknown in Italy, or at least very incomplete.[2] In the number seems to have been the fine manuscript containing seven tragedies of Sophocles, six of Æschylus, and the "Argonautica" of Apollonius Rhodius, which about this time came into the hands of Niccolò Niccoli, and is mentioned with such delight by Ambrogio Traversari[3] in a letter to that celebrated Florentine. Other works were obtained by Palla degli Strozzi, among them Plato, the "Cosmography" of Ptolemy, the "Lives" of Plutarch, and the "Politics" of Aristotle, the latter previously unknown in Italy.[4] Filelfo came back similarly laden in 1427,[5] and the various scholars who resorted to Constantinople to study the language generally returned with rich supplies of books from the stores existing there. Thus, before the capture of the city by the Turks in 1453, it is conjectured that all the great works of Grecian genius then in existence were transferred to Italy.[6] A little later the "Institutes" of Theophilus were brought to light by Politian, and afterwards commented upon and published by the Dutch scholar Zuichm.[7] The "Ethiopica" of Heliodorus are said to have been picked up in the street by a common soldier in the sack of Ofen in 1526.

The establishment of printing-presses at Rome, Naples, Bologna, Ferrara, Milan, and above all, of the Aldine press at Venice, placed copies of the classics within the reach of all who desired them. Instead of the enormous prices paid for books when each manuscript was slowly transcribed by hand, Musæus was sold for less than twenty-five cents, and Theocritus for less than fifty. Each volume

[1] Tiraboschi, Vol. VII. p. 174; Symonds, p. 141; Heeren, § 23.

[2] Tiraboschi, Vol. VII. p. 175; Ginguené, Vol. III. p. 264; Heeren, § 23.

[3] Ambrosii Camaldulensis Epistolæ, Lib. XV., Ep. I., contained in "Veterum Scriptorum et Monumentorum, etc., Collectio," Tom. III. (Paris, 1724).

[4] Symonds, p. 166.

[5] Tiraboschi, Vol. V. p. 175.

[6] Symonds, p. 141.

[7] Tiraboschi, Vol. VI. p. 851.

of the octavo Aldine edition of Greek and Latin authors brought about the latter sum, which is less than half of what works of the same quality would cost to-day.[1] The settlement of texts and the reduction of chaotic manuscripts to a state in which they could be read and appreciated, closed the brilliant service of Italy to the literary world, and inaugurated that new era whose light it is our good fortune to enjoy.

In more recent times, chiefly in the present century, several important restorations of works previously regarded as lost have been made by the deciphering of palimpsests, in which the writings of classical authors had been erased to make room for Biblical transcriptions, or ecclesiastical treatises. The use of these *codices rescripti* undoubtedly grew out of the dearness of writing materials. Parchment was above the reach of many, and papyrus had become rare and costly after the conquest of Egypt by the Saracens in the seventh century, the manufactories at Alexandria having then been closed.[2] In these circumstances, when a new work was to be made, the manuscripts least valued were often washed, scraped, and prepared to be written on anew. The statements frequently indulged in by reputable writers, representing the mediæval copyists as regularly destroying the classical authors to fill their places with ecclesiastical disquisitions and worthless lives of saints, are far from just. The fact is that any work which was at hand and could best be spared, no matter what its nature, was taken for this purpose. If it is true that the classics were often sacrificed, it is also true that even Biblical manuscripts did not escape, and that ecclesiastical works were sometimes erased to make room for the secular literature of Greece and Rome.[3] In addition to this, so far as can be inferred from the palimpsests yet discovered, no work seems to have been thus destroyed, unless it was already in so imperfect a state as to be thought of little value.

The length of the present article forbids us to enter into any discussion of palimpsest literature; and indeed, the elaborate and easily accessible article in the "Encyclopædia Britannica" renders such a course unnecessary. We may mention, however, the principal works which have thus been recovered. These are a portion of the ninety-first book of Livy, fragments of several orations of Cicero and Symmachus, part of the "Vidularia" of Plautus, almost all that we possess of the rhetorician Fronto, a great portion of the

[1] Symonds, p. 381.

[2] Muratori, Vol. VII. p. 79, Diss. 43.

[3] See the list of palimpsests in the Wolfenbüttel Library, mentioned by Ebert, Vol. I. and those discussed in the Encyclopædia Britannica. So, too, Symonds, p. 129.

long-sought "De Republica" of Cicero, the "Ars Rhetorica" of Julius Victor, the "Institutes" of Gaius, the "Annals" of Granius Licinianus, several of the old commentators on Virgil, fragments of the "Theodosian Code" and of the ante-Justinian civil law, important parts of Polybius, Diodorus Siculus, Dionysius of Halicarnassus, Appian, Dion Cassius, Iamblichus, Dexippus, Eunapius, and Menander of Byzantium. It is by no means impossible that other lost works of classical authors may still be lurking behind the text of unexamined palimpsests, and that future investigations will yield us treasures equal in value to those which have already been discovered.

*THE TEACHER'S WORK IN THE DEVELOPMENT OF MENTAL AND MORAL POWER.**

BY N. A. CALKINS.

LET it be distinctly understood that the purpose of this paper is to consider only that part of the teacher's work in education which specially pertains to the development of the pupil's mental and moral powers, leaving aside the acquisition of knowledge as one of the aims of teaching.

Vegetable life exists in the unexpanded bud; but that life awaits the developing influences of warmth, light, air, and moisture, before its unfolding power is manifested through the delicately formed leaves and the beautifully tinted blossoms, which charm the eye and send forth their fragrance through all the air around.

Physical power exists in the slender muscles of the young child; but that power must await the developing influences that come to it through nourishing food, fresh air, and proper exercise, before it can manifest itself in those acts which are the result of physical strength.

Mental power exists in the untaught and untrained mind; but that power does not manifest itself until those influences which are adapted to develop its capacities of action reach it through the several senses, and cause the mind to act upon things external to itself, and thus to produce mental strength.

Moral power, notwithstanding all the aid furnished by that innate guide which reminds us of the right and warns us of the wrong, must be developed to activity by the influences that surround us and act on the emotions. The moral power is made strong by entertaining right feelings and repeating good acts until they become fixed habits.

As in proportion to the extent of the favoring influences of light, warmth, air, and moisture, will be the completeness of the development of the bud into a healthy leaf, or into a productive blossom; as in proportion to the proper use of nourishing food, sunlight, and air, and the employment of exercises appropriate to the development of the several muscles, will be the degree of physical strength attained; so in proportion to the extent and activity of those developing

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influences which reach the mind through the several senses and lead it to habits of careful attention to things, actions, and its own thoughts, will the mental and moral strength become so developed as to control the individual, and exert upon all around that power which is the result of education.

The teacher can best attain the control of that power which comes through education, by the observance of the laws of mental growth and due attention to the *art of teaching.* Furthermore, the proper development of this power is chiefly due to the right influences that are brought upon the mind by the work of the teacher; therefore the degree of its strength and the extent of its influence will depend upon the methods of training that are employed and upon the skill displayed in the use of them.

The laws of mental growth may be ascertained and the art of teaching understood by means of the science of education. This science, therefore, becomes a guide for the development of mental and moral power. The science of education consists in a knowledge of those principles of psychology that account for the manner by which the mind gains knowledge. Its foundation extends down to the laws of our being and growth. It embraces the principles of physical, mental, and moral actions, and all suitable means for the proper development of the human being. *It is a standard by which methods of education may be tested.* As a science, it tells us *what* education is, and *why* it is what it is. It treats of the nature of education, of its relations to mind and matter, and to the laws of our being.

To aid us in the better understanding of the character of that developed power which the teacher's work should secure for his pupils, let us first go to Nature and observe how she proceeds in teaching. While attempting to describe Nature's processes of training her pupils, I shall take the liberty of using, in part, the language of Joseph Payne, late professor in the College of Preceptors, of London.

"The child takes notice of objects and actions, manifests pleasure or pain in connection with them, and indicates a desire or will to deal in his own way with the objects, and to take part in the actions." We also observe that the child increases his bodily strength by unceasing movements, seemingly made for the sake of the movement, and as if this exercise constituted his very life; and we observe, further, that the same movements are made over and over again, and that thus the muscles and nerves learn to work together, and that physical power is the result. In a similar manner the impressions communicated to the mind through the organs of sense excite those

organs to activity, and thus cause them to acquire that facility by which the impressions conveyed "grow from cloudy to clear, from obscure to definite, by dint of endless repetition of the functional act." This exercise of the organs of perception brings the child into contact with the properties of matter, and initiates him into the mysteries of hard and soft, hot and cold, heavy and light, sweet and sour, and also into the many varieties of shape and color which objects present. Such are some of the conditions and activities of the child, when a pupil of Nature, seeking knowledge by his own unaided efforts. He is simply teaching himself under the influence of Nature, and this self-teaching develops his physical and mental powers.

"Long before the teacher, with his apparatus of books, maps, globes, diagrams, and lectures, appears in the field, the child has been pursuing his own education under the direction of a higher teacher than any of those who bear the technical name. He has been learning the facts and phenomena which stand for words and phrases in the great book of nature, and has also learned some of the conventional signs by which those facts and phenomena are known to his mother-tongue.

"Nature's earliest lessons consist in teaching her pupils the use of their senses. The infant, on first opening his eyes, probably *sees* nothing. A glare of light stimulates the organ of sight, but makes no distinct impression upon it. In a short time, however, the light, reflected from objects around him, impinges with sufficient force upon the eye to impress upon it the images of things without; the perception of the image is duly transferred to the mind, and thus the first lesson in seeing is given. When the same image is repeated to the mind, the child learns to recognize its form as a whole. Nature presents the child with material objects, and things already made, or done, as a whole, not in parts or elements. The child has no choice as to the place to begin in getting knowledge of them, and must learn things as they are presented. Nature ignores altogether, in her earliest lessons, the synthetical method, and insists on the pupil employing the analytical."

The child-pupil takes hold of objects within his reach, conveys them to his mouth, knocks them against the floor, and thus discovers differences between them, and by performing such experiments gratifies, instructs, and trains the senses of sight, touch, taste, smell, and hearing. The young child sees a bright and beautiful object close at hand. Nature whispers, "Touch it; find out what it is." He puts his fingers into the flame and burns them. Not being quite sure of the cause of the pain, he tries the experiment again, and learns an important lesson in the art of living.

"During all this time, who has taught the child? Nature, — the child himself, — practically they are one. She has given him no rules, no laws, no abstract principles, no formula, no grammar of hearing, of seeing, walking, or talking; she simply furnished the materials, and gave the faculty, and supplied the occasion for its exercise, and her pupil learnt to do *by doing*. This is what Nature, the teacher, did. Nature furnishes knowledge by object-lessons, and she trains the active powers by making them act. She has given the capability of action, and she develops this capability by presenting occasions for its exercise. Action, action, is her maxim of training; things, things, are her lessons. She adopts much repetition in her teaching, in order that the difficulty may become easy, and 'use become second nature.' In physical training, 'use legs and have legs' is one of her maxims; and she acts analogously in regard to mental and moral training.

"She teaches quietly. She does not continually interrupt her pupil, even when he blunders, by outcries and objurgations. She bides her time; and by prompting him to continued action, and inducing him to think about what he is doing, and correct his errors himself, makes his very blunders fruitful in instruction. She does not explain the difference between hard and soft objects, but says, 'Feel them.' Between this fact and that she says, 'Place them side by side, and mark the difference yourself.' And generally she says to her pupil, 'Don't ask me to tell you anything that you can find out for yourself.' She mingles lessons in physics, language, morality, all together. Her main business seems to be the training of faculty, the development of power."

Having briefly considered Nature's processes in education, let us now examine some of the modes of procedure by the teacher when the child enters the school-room, that place above all others which should supply him with the very best opportunities for developing his mental powers, and for getting real knowledge, — knowledge that will be useful because it is adapted to assist him in the performance of life's varied labors; and valuable because it is the means of developing the powers of mind to increased ability for meeting every responsibility and discharging every duty that may come upon him.

When the teacher receives the pupil from Nature's hand and leads him into the school-room, what is done to continue that development which Nature had begun so well? Does the teacher take up the great work at the point to which Nature had carried it, or rather led the young pupil, and conduct him onward in the same royal road? I

leave this question to be answered by your own experiences, — each for yourself, — while I inquire, What were your first lessons in school? Did those lessons have any relation to the things that you had learned from Nature, — from the products of the field, the trees of the forest, the fruits of the garden, the activities of the shop, and the characteristics of animal and vegetable life? Were the powers that you had begun to develop by your own efforts in getting knowledge made still stronger by your earliest lessons in the school-room? Did you ever discover any possible relations between the names of the letters of the alphabet, or between those meaningless syllables, a-b ab, b-a ba, b-e be, b-i bi, b-o bo, b-u bu, — and the spoken language that you learned to use before you crossed the threshold of the school-room? Impossible! for not even the *echo* of sense could be heard in the sounds of such syllables.

Did your first lessons in school furnish answers to the child's oft-repeated questions, "What is it?" "What is it for?" Did your first lessons in geography lead you to observe more carefully the hills, the valleys, the streams, ponds, and towns in the vicinity of your home, and thus prepare you to comprehend the features of other places and countries which you had not seen? Did your lessons in spelling cause you to remember words chiefly by their position in a given column, or by means of a chance association with the preceding word? Were you told to learn rules in arithmetic first, and then to apply them to your examples? Did you ever puzzle yourself by trying to find some rule that would enable you to work out a question similar to the following: What would twenty-five pounds of beef cost at twelve cents a pound if one third of it was bone? But I need not hold up these interrogative pictures of the past: your own remembrances of early school scenes will enable you to continue this review. And it is barely possible that some children now in school may be familiar with similar experiences, and thus be able to furnish you the opportunity for observing the deadening influences of such exercises on the mind.

Perhaps some one who has no regard for Nature's teaching may say, "It is no concern of ours to teach in school that which an observant, an intelligent child would learn out of school." In reply, it may be said with greater force that it is our duty to train every child in school in such a manner that he will learn from nature, *out* of school, because he has acquired a taste for such knowledge by means of his lessons *in* school. Furthermore, it is our duty to teach him *how to learn*, and also to direct him to that which is important to be learned.

In order to set forth in a clearer light what is the legitimate work of the teacher in the *development of mental and moral power*, after the pupil enters school, I will endeavor to explain some of the terms employed in describing that work, and will state a few of the principles of education on which it should be based.

Teaching implies the proper guidance of the learner to the sources of knowledge, and training him in the manner of getting and of using knowledge properly. Learning is self-tuition; teaching is superintending the processes of learning.

Training, in education, implies exercising the powers of mind in such a way as will give facility to its acts, and thus increase the quickness in perceiving, the readiness in remembering, accuracy in reasoning, and skill in doing.

The art of teaching implies skill in using proper methods, in accordance with the principles of education. Bacon said, "Art is man's work added to Nature's work." In teaching, art means the supplementing and continuing the work of development and education that is begun by Nature.

A principle of education is a general truth gained by an analytical investigation into the nature of the child as a thinking being. It is a law of the mind and a rule of its action, and should be a guide to the teacher.

Development, in teaching, signifies a laying open of the subject by degrees, so that the pupil shall discover the idea, the fact, or the principle to be learned. The development, expansion, or growth takes place with the idea, the thought, and the power of the mind; not with the things, nor the words of the lesson. *Ideas* may be developed; *words* must be given to the pupil. The *meaning* of words may be developed by enlarging the ideas which they represent.

Cramming, in teaching, is the opposite of developing. It is an imposition of ready-made results upon the child's mind. It makes the pupil's mind a passive recipient of matter forced into it, but does not increase real power. Cramming has nothing in common with the art of teaching, and it is condemned by the science of education and by experience.

Among the important principles of education which intimately relate to the development of power are the following: —

The action and reaction between the external stimulants — material objects — and the mind's inherent powers constitute the processes of natural education. The influence of things upon mind, and of mind upon things, educates the child.

The mind, in its early stage of gaining knowledge of things, attends first to the whole; during later stages, it subdivides the whole into its parts, and from particular facts infers general truths. It discovers facts from analysis, but transmits them to others by synthesis. The teacher should follow this natural order, leading the pupil to the fact by analysis, but requiring him to show by synthesis that he has gained it.

Repeated exercises of bodily organs give ease of action and produce habits. Proper exercise of the mental powers gives clearness of perception and certainty of knowledge. Proper exercise of any bodily organ or mental or moral power increases its strength.

Right methods of education make the pupil an active *doer*, not a passive receiver. The mental acts by which knowledge is gained are acts of the learner. It is what he does for himself — his personal experiences — that educates him, and not that which is done for him. The teacher cannot think for the pupil any more effectively than he can sleep, eat, or walk for him. The teacher can only *induce*, stimulate, and awaken thoughts and desires that will lead the pupil to acquire knowledge. The true function of the teacher is that of a stimulator and guide of the learner, so that his work shall result in a systematic building of knowledge into the mind. He ascertains the need of the pupil, awakens in him a desire to satisfy it, then leads him to the sources of supply, and teaches him to help himself, both from nature and from books.

Ideas must be formed in the mind, and words given to represent them, before they can be expressed or communicated to others. The child learns by observation, examples, and practice; not by precepts, rules, or theory. Precepts and rules aid in remembering that which is learned by observation and practice.

Unknown objects and words can be illustrated and explained only by well-known objects and words; therefore the teacher should start from that which is well known to the learner, and proceed to the kindred unknown which constitutes the matter to be learned. By way of explanation, it may be added here that this early training of the child's powers by means of the surrounding, familiar objects and acts prepares him for understanding facts relating to kindred matters, which the prolonged experiences of others have learned from nature. These experiences having been tested repeatedly and formulated into certified facts, truths, and science, should be presented to the pupil at the proper time, as the result of the labors of past generations, and as a shorter course than that by which the first learners attained the present state of knowledge.

It belongs to the teacher's work to divide the difficulties of the subject into proper steps, and thus enable the pupils to surmount them one by one. It is also his duty to point out to them the facts which should be learned *first*, and then those that ought to succeed in their proper order.

Since activity is a prominent characteristic of childhood, and since the child likes to try to do what he sees others do, the teacher should provide examples of doing which may be imitated by the young learner. In every lesson, where it is practicable, let the pupils be given something to do with their hands, and required to describe that which is done.

To aid in the development of mental power, put questions on each lesson in several different forms, yet make them definite. Shape each succeeding question with reference to the answers previously given, and also to the point to be gained. Do not attempt to draw from a pupil by questions what he has never taken in. See that the pupil has had the opportunity of gaining the knowledge before you ask him to show it.

Among the most important matters requiring the teacher's attention, for the development of power, is that of *training pupils to do exactly what they are asked to do, in every school exercise;* no more, no less. It will cultivate habits of proper attention, of quick and accurate understanding, and train them to follow directions correctly, and to obey orders fully. Such habits become the corner-stone of excellent discipline, — the key to success in maintaining good order.

Power is developed by unconscious tuition; therefore each teacher's own life-work should be worthy of imitation by his pupils. All his acts, as well as his words, should be truthful. Promptness, neatness, painstaking, politeness, and kindness may be effectively inculcated by deeds, even though the words spoken be few. With children, things seen are mightier than things heard; and example is tenfold more powerful than precept.

The development of moral power is based upon exercise of the emotions. The emotions that we entertain return to us again and again, until they finally remain, permanently influencing our conduct. Every action that we perform, every thought that crosses the mind, every emotion that we feel, is the beginning of what may become a habit, and a part of our character. It has been truly said, "A thought is an embryo action: give it time, and it will mature itself; entertain it, and it will return again and again, until at last nothing but a determined effort of the *will* can prevent it from acting itself out." Herein lies the real source of much of the wrong-doing in the

world. Wrong thoughts are first entertained until, unconsciously, they gain the power to escape in actions; and society is astounded by some great crime. The thoughts that prepared the way for the bad act had been entertained until their accumulated strength overcame the resistance of a weakened will. No person is competent to say he will do a wrong act only once, because the doing of that very act once deprives him of a portion of his power to resist the temptation to do it again. So, on the other hand, each single manly resistance of an inducement or inclination to do a wrong act increases the power of resistance, and weakens the temptation or desire to do it.

To impress those under our instruction with the importance of entertaining only *good* thoughts, and of acting from right motives, is our highest duty. Success in this is the greatest triumph that a teacher can attain. Training pupils in good habits of thinking and acting is of greater value to them than the learning of all that the best text-books contain concerning the whole circle of the sciences. The teacher's true work in the development of moral power is governed by the same laws as in the development of physical or mental power; and it consists in providing the means for such exercises as will increase the strength of this power, and in so guiding the pupil that the proper exercises shall be taken. Moral power must be acquired by "*the doing.*"

From what has already been said, it will be understood that my aim has been to show that true education is a development of power: of power to see distinctly, and to comprehend; of power to hear accurately, and to understand; of power to observe, to compare, to think, to judge, to reason, to remember, to will, and to act rightly: and that each variety of power can be developed only by and through the proper exercise of the appropriate organs. Seeing cannot be trained by hearing; the power to observe and compare cannot be developed by committing words to memory; the power to reason cannot be made strong by memory alone. The acquisition of knowledge and the development of power go forward hand in hand when properly conducted. When the mode of acquiring knowledge is such as to cause a proper exercise of the faculty which should be employed in the process of getting it, the desired power is certain to follow.

In an excellent paper on "Teaching Natural Science in Schools," Prof. Wilson, of Rugby, describes the kind of work in teaching that will produce development of mental power. He says: —

"Theory and experience alike convince me that the master who is

teaching a class quite unfamiliar with scientific method ought to make his class teach themselves, by thinking out the subject of the lecture with them, taking up their suggestions and illustrations, criticising them, hunting them down, and proving a suggestion barren or an illustration inapt; starting them on a fresh track when they are at fault, reminding them of some familiar fact they had overlooked, and so eliciting out of the chaos of vague notions that are afloat on the matter in hand — be it the laws of motion, the evaporation of water, or the origin of sand drifts — something of order and concatenation and interest, before the key to the mystery is given, even if after all it has to be given. Training to think must be first and foremost as his object. So valuable are the subjects of natural science intrinsically, and such excellent models do they provide, that the most stupid didactic teaching will not be useless; but it will not be the same source of power that the 'methods of investigation' would be in the hands of a good teacher."

It is proper now to consider if the training for the development of power should be of the same kind, and intended to affect the same faculties, during all the stages of education. The answer to this important inquiry must come from the laws of development. By an examination of these laws we discover that there are periods of development for the mind, as well as for the animal and the plant; that during each of these periods the exercises should be adapted to those particular powers that come into activity then.

First Period. — The period of childhood up to *about ten years of age* is the one during which the senses are developing, and the perceptive powers are most busily occupied with surrounding objects in gathering facts and the elements of knowledge from the external world, and in learning to understand and use language. During this period the teacher's aim should be to train those powers that are employed in getting elementary knowledge, as a basis of future attainments in language, science, and art. Things — their properties, uses, and names — are among the materials that must occupy an important part of the time. This is the period for gathering facts relating to all surrounding objects; and the exercises for instruction should facilitate this end, and thus prepare for scientific investigations during later periods of development.

Second Period. — The period from the age of *ten to about fifteen* is the time specially appropriate for giving attention to language and to the cultivation of memory. While the accumulation of facts should still form an important part of the teacher's work, great efforts should now be made toward forming habits of ready and

accurate recollection and the use of language. Special attention may be given to geography, history, biography, descriptions, compositions, and to committing to memory poetry and declamations, sentiments and quotations, as a means of storing the mind with gems of thought clothed in beautiful language, and of developing the powers of memory.

Third Period. — The period from *fifteen to twenty years* of age should be occupied with subjects that furnish exercise for the powers of reason and judgment, as mathematics, physical laws, logic, and the natural sciences.

In conclusion I will add, knowing the nature of the being to be taught is indispensable to certain success in the work of developing power. Power, in education, comes by and through well-formed habits of careful observation, of intelligent thinking, of accurate description, and of learning by doing.

Knowing *what* to teach, and knowing *how* to teach, are two very different things. Knowing *what to teach* is a great attainment of knowledge; knowing *how to teach* is the attainment of a great art. As a means, therefore, of securing the desired development of power, attend first to learning the nature of the being to be taught, then to what to teach and to the art of teaching; and with faithful labor and patient waiting, success will crown your work.

GERMAN UNIVERSITIES.

BY JAMES WASHINGTON BELL, LEIPZIG.

WHAT most strikes an American on visiting the German universities or colleges — for this English distinction is unknown here — is, in the first place, the unpretentious buildings that are made use of. Though Leipzig is not a large place, a stranger might walk through it from morning till night and pass and repass the university buildings without ever suspecting that inside, in dingy rooms filled with the commonest wooden benches, the foremost men in Europe, in their departments, were lecturing to young and even middle-aged men from every quarter of the globe. With us, a magnificent pile of buildings is usually the first step in founding a university; the library, apparatus, and general inner economy being too frequently matters of secondary importance. The Germans, on the contrary, rent or build a row of houses in a quiet part of the city, get together all the books and manuscripts they can afford to buy, erect as many museums and laboratories as possible, and offer perhaps modest incomes, but with a large liberty and many privileges, to talented and enthusiastic men, irrespective of creed or politics, to come and further the cause of science and learning. In short, here the instruction and intellectual advantages to be had make the university; there, in too many cases, the buildings and externals.

What the Germans themselves regard as the chief characteristics of their system may be summed up in freedom of teaching, freedom of learning, method, and organization. Those who teach can, with unimportant exceptions, teach as much or as little as they like, how they like, and what they like; and every graduate can, by passing an extra examination, claim the right to teach. "At this moment," says Prof. Helmholtz, of Berlin, "the extremest consequences of the materialistic metaphysic, the boldest speculations on Darwin's theory of evolution, can be taught in German universities just as freely as the most extreme deification of papal infallibility."* Those, on the other hand, who learn, learn what they like, in what order they like, and when they like. A famous professor says: "The German university desires no other diligence than that which springs from the personal resolve of the student himself."† With unimportant

* Die Akademische Freiheit der Deutschen Universitaeten, 1878.

† Die Deutschen Universitaeten, etc., von H. von Sybel, 1874.

exceptions for those who intend entering the service of the state,* the student may choose his own lectures, and even then attend them or not as he sees fit. "An opinion that does not rest on independent, personal conviction is at bottom worthless," says Helmholtz.† "No discipline is ever requisite to force attendance upon lectures which are really worth the attendance, as is well known wherever any such lectures are given"; this was Adam Smith's experience, and the German universities give practical proof of its truth.

Thus, freedom to almost any one who wishes to teach, to do so and take his chances; the utmost freedom in teaching to those who teach; and freedom for both teachers and taught to move unhindered to any of the score of German universities where they think they can do better, — form the *Magna Charta* of these universities. No attempt is made to draw students to, or retain them at, any university, beyond presenting the best opportunities possible for study and investigation. Here they may hear a man lecturing on a subject in which he is a recognized authority; there, facilities are offered for using a museum or rare collection, or visiting a famous hospital; nowhere are scholarships, bursaries, or fellowships, which "attach a certain number of students to certain colleges, independent altogether of the merit of those particular colleges," advertised as a reason for visiting or remaining at any college rather than another. "Were the students upon such charitable foundations," says Adam Smith, "left free to choose what college they liked best, such liberty might perhaps contribute to incite some emulation among different colleges." This shrewd Scottish professor has shown as clearly as any German the objections to such a system. "Whatever forces a certain number of students to any college or university, independent of the merit or reputation of the teachers, tends more or less to diminish the necessity of that merit or reputation," was penned over a century

* And even here it is the state, and not the university, that prescribes certain lectures for its officials.

† The same author's opinions on this double-sided freedom may be gathered from the following sentences: "The student's full conviction is only to be obtained when the free expression of the teacher's conviction is guaranteed; in other words, with freedom of teaching. . . . There exists in Germany no hindrance to the discussion of any scientific controversy (wissenschaftliche Streitfrage). Of freedom of teaching in this sense, there can be no talk in French or English universities. . . . Thus there runs through the whole organization of our universities this reverence for free, independent conviction, which is more firmly implanted in the German races than in their Aryan relations of Roman and Celtic origin."

Prof. Mayerhoff wrote over forty years ago, "Teachers must have freedom to teach, and scholars to learn. These conditions are necessary, because in so far as they are circumscribed or restrained, so is culture; the prime purpose of a university is then given up."

ago, and in England; though Germany has carried out the spirit of it more than any other nation, with what advantage may be seen.

Through this custom of moving about, a student can hear all the best men of Germany in his department, learn something of their methods and ways of teaching, get thoroughly drawn into the various scientific and literary currents of the day, and so be in a better position to value them at their worth and form his own opinions of them.

As to lectures, studies, and way of life, both professors and students are left as free and untrammelled as possible.* The former are there to further science and national culture, to teach and guide young men who come to study and think. The student who has hitherto been learning, acquiring facts and information on authority, is now expected to study, to examine, weigh, and judge for himself. He has brought with him to the university a certificate of ripeness (Maturitaets Zeugniss); he now enters man's estate, and must no longer rest his convictions on what society, his teacher, or his text-book says. So thoroughly, indeed, do German professors abhor anything like swearing *in verba magistri*, that they prescribe no text-books at all. In the opening lectures of a course, each teacher sketches the history of his science, gives the main views of the different schools as impartially as possible, points out the leading and recognized authorities in each department, and the student's duty is then to think his way through to independent ground. Each professor is expected, and indeed regards it as his most sacred function, to act, like Socrates of old, the part of the intellectual midwife.†

Next as to science or method. "Our task consists essentially," says Von Sybel, "in communicating to the student the *method* of his science, and thereby putting him in a position, not perhaps of becoming a *savant* himself, but at all events of prosecuting his future calling in a philosophic spirit and manner. He must learn, before all, what science is, how one goes about scientific work, and what scientific creation means; . . . he must be allowed to take part, as far as

*Carlo Cantoni, an Italian writer, favorably known by his discussion of university questions, has contributed a series of articles on University Reform to late numbers of the *Nuova Antologia*. His attitude toward German universities may be gathered from the following: "Complete union of all the Faculties, liberty to the professors to teach what they believe (tutti quegli insegnamenti che credono), liberty to the students to attend the lectures that suit them best, lecture fees for the benefit of the professor, are in short the principal changes we propose."

†"The essence and excellence (das Wesen und der Vorzug) of our universities consist in making active (self-thinking) and not merely receptive scholars." — PROF. VON SYBEL.

"The alpha and omega of our method is the training up of youth to complete independence of thought." — *Id.*

possible, in the creative development of thought." Whatever in later life his calling may be, he must, during his academic years, be a disciple of science and nothing else; because the best preparation for every calling is the attainment of scientific maturity, flexibility, and independence of mind. In 1865, Matthew Arnold was sent by the Schools Enquiry Commission of England to study the middle and higher education of the Continent. I can best say here what I wish by quoting a few sentences from his report. I use the second edition of 1874: "The paramount university aim in Germany is to encourage a love of study and science for their own sakes; and the professors, very unlike our college tutors, are constantly warning their pupils against *Brodstudien*, — studies pursued with a view to examinations and posts." In all the universities, examinations are still used as a supplementary test of the candidate's fitness for a degree. In theology, medicine, and law, two are required; in philosophy, or as we should say arts, only one. "But in none is the degree examination in itself such as to make it what the degree examination is with us, — the grand final cause of the university life. 'Der Zweck des Lebens ist das Leben selbst,' says the German poet; and this is certainly true in Germany of the university life." The chapter ends thus: "Such . . . is the system of the German universities. *Lehrfreiheit* and *Lernfreiheit*, liberty for the teacher and liberty for the learner; and *Wissenschaft*, science, knowledge, systematically pursued and prized in and for itself, — are the fundamental ideas of that system. The French . . . are naturally most struck with the liberty of the German universities, and it is in liberty that they have most need to borrow from them. To us, ministerial programmes and ministerial authorizations are unknown. Our university system is a routine indeed; but it is our want of science, not our want of liberty, which makes it a routine. It is in science that we have most need to borrow from the German universities. The French university has no liberty, and the English universities have no science; the German universities have both." Whether the last sentence does not owe some of its easy swing to a pardonable exaggeration is perhaps questionable; but this much is beyond dispute, that the whole method and system of management of German universities allows more liberty to all concerned, is freer from all caprice and arbitrariness, is, strange to say, more democratic, and accomplishes more, and more cheaply, than the universities of either Britain or America.

The professor who by his own diligence and ability has fought his way up amid the freest and fullest competition, comes into no relation

with his students but as a teacher and guide. If any student transgress the college statutes, the regular university court, over which a jurist presides, punishes him by depriving him temporarily of certain privileges; or in extreme cases, erases his name altogether from the roll. If he commit any crime, he has, like any other citizen, to reckon with the police.* The university is consecrated to learning and research: it is there to elevate and quicken the intellectual life of the nation, and for no other purpose; it keeps no boarding-house; it declines being turned into a reformatory; it undertakes to look after no wild boys, or see that they attend lectures and prayers; it gives no scholarships or prizes to encourage clever but lazy pupils. What it gives to poor students, it really does *give* and to *poor* students, and not under the form of a bribe, by remitting the lecture fees altogether, or allowing students to pay for them when they have finished their course and received appointments. If the German student learns at all, he must learn from a different and more permanent, not to say purer, motive; for scholarships and fellowships, in the English sense, are unknown. The money saved is spent on lectures, books, apparatus, or whatever tends to encourage original research and study for its own sake.

There is a considerable difference of opinion of late, even in England and America, on the system of competitive examinations. Rev. A. R. Grant, late inspector of schools in England, has a good deal to say against it in the "Nineteenth Century" for last November. Among other things, he blames the system for treating the mind improperly, which, instead of being trained by a course calculated to draw out and develop its powers, "is charged with instruction designed for an immediate purpose"; that it enlisted "ambition in the service of learning," and made students, not for the love of knowledge, but of distinction; that "the love of learning for its own sake was often overpowered in the few who had it, by the superior force of the secondary motive." Its baneful effects did not even stop with the students, who often, like Tennyson's "Princess,"

> "Sought far less for truth than power
> In knowledge,"

but extended to the teacher, who soon found that "knowledge need not be deep or even sound in order to be readily producible; nay, even that thorough teaching was often pains thrown away for examination purposes. Hence originated 'cram'; *i. e.*, teaching with a

* *I. e.*, since the introduction of the new regulations in 1878. Before this, a regular university court attended to him.

view to a specific examination alone of various degrees of literary dishonesty, but in all cases aiming at passing off a counterfeit instead of real knowledge." The same question is well discussed in the "Atlantic Monthly" for May, 1880, where the writer suggests three changes in American universities: first, fewer examinations and more leisure work; second, "greater freedom for students, both as regards their choice of study and attendance at recitations; and third, a different method of appointing college instructors." On the second point, we have seen above what German opinion is; of the third, presently. As to the first, it may be of interest to know that competitive examinations play a very subordinate part indeed in Germany. "So well do the Prussian authorities know how insufficient an instrument for this object—that of promoting the national culture and filling the professions with fit men—is the bare examination test; so clearly do they perceive that what forms a youth, and what he should in all ways be induced to acquire, is the orderly development of his faculties under good and trained teaching."* Hence in the instructions for the examinations, it is provided that the latter shall not be such as to tempt to any special preparation, but to be such as "a scholar of fair ability and proper diligence may at the end of his school course come to with a quiet mind, and without a painful preparatory effort tending to relaxation and torpor as soon as the effort is over." This refers to school; but Hart, in his valuable work on German universities, says: "The future scholar of Germany is a man of whom we in America have no conception. He is a man who could not exist under our system; he would be choked by recitations and grades. What he studies, he studies with the devotion of a poet and the trained skill of a scientist. The idea of competing, of putting forth all his energies in a trial of skill after the fashion of the English university examination, has never occurred to him. He studies to learn, to master what has been done before him, and to contribute if possible to the growth of knowledge; he reads with a view to paramount results, not to examinations." In the civil service, even this test takes a secondary place. "The German postal system," to take one example, "is the most democratic in the world, for this reason: that every youth in Germany, practically speaking, may become a postmaster by his own choice; that is to say, the service is open to all those to whom the certainty of permanent employment with promotion, and on retirement a pension, is sufficient reward for the preliminary course of study that must be

* Higher Schools and Universities in Germany, by M. Arnold, second edition page 58.

pursued, and the few years during which only an extremely low rate of pay is enjoyed."* The above describes exactly the position of professors in the universities, as does also the following, from the same pen: "In short, the civil service is a profession which a man chooses for himself, as he chooses medicine or law or the ministry. Like these professions, it exacts from its members a previous course of special discipline; and when that has been completed, imposes no further tests except efficiency and good conduct." The student troubles himself very little about examinations; sound, honest work in any department on any subject is never lost or thrown away; "cram" would be promptly detected, so he governs himself accordingly. When he wishes to graduate,—that is, when he feels *ripe*,†—he hands in an original dissertation in some department he professes to have mastered. If this prove satisfactory, he is now examined; and if successful, his name appears by itself in one of three classes, according to the satisfactoriness of his examination. Nearer than this, which simply means very well, well, or passed, the German examiners do not pretend to classify his intellectual acquirements or abilities. They try to judge by an absolute standard, and not one changing every year; and no attempt is made to find out how he would stand if pitted against his contemporaries, or whether he could, in a given time, answer a given number of questions as smartly and appropriately as others whom fortune had given him as classmates.

As these "artificial stimulations of vanity and emulation" are left out of the German programme, there is a corresponding absence among the students of all rivalry and work prompted by that motive, of all *tumultuarische Vorbereitung* or "cramming," of all training "in the art of producing a clever answer to a question on a subject of which you have no real knowledge," to use the words of Mr. Mark Pattison. Care is taken on the teacher's side that the "instruction may not degenerate into a preparation for the examination, that the pupil may have the time requisite to come steadily and without overhurrying to the fulness of the measure of his power and character, that he may be securely and thoroughly formed, instead of being bewildered and oppressed by a mass of information hastily heaped together."‡

* New York *Nation*, Feb. 26, 1880.

† Great latitude is allowed as regards the time a student may spend at a university before graduating. The minimum time varies at different universities and in different Faculties, and a maximum limit does not exist.

‡ *Perverse studet qui examinibus studet*, was a favorite maxim of Wolfo, the philologist.

The Germans call the English universities seminaries; Signor Matteucci calls them *hauts lycées;* Mark Pattison complains that English education tends to raise a class of clever reviewers; Matthew Arnold says that, "with their college and tutor system, — nay, with their examination and degree system, — they are still, in fact, *schools*, and do not carry education beyond the stage of general and school education"; and Grant Duff, after a special study of the subject, points to the German universities as, in spite of their faults, far ahead of all similar institutions.* In America, Dr. G. M. Beard complains of the want of a sufficient body of trained men capable of forming an independent opinion on special scientific works. "Our ideas, like our silks, must have the stamp of Europe upon them even if manufactured here." "Philosophical works of an original character," he continues, "cannot obtain in this country any considerable amount of intelligent criticism, either favorable or the reverse"; and though matters are improving, "even now very few individuals and few journals are able to decide whether any new contribution to thought is a great truth or a great folly until England and Germany have been heard from."† Here the universities are censured indirectly or negatively; but Mr. Brown, in an article in the "Atlantic," cited above, brings home the charge thus: "As success in the majority of examinations does not require that the student should be an original or broad thinker, it is not surprising that the majority of recent graduates of Harvard lack, on graduation, that training in independent thought which is so necessary to true culture."

Perhaps more important still than this absence of petty rivalry between the students, is the thorough "equality and fraternity" existing among both students and professors of the different departments. The idea, so prevalent in England, that the abstract sciences are aristocratic in their relations to one another, that the specialist in classics or mathematics stands in some way above his brother who is making his mark in zoölogy, Coptic, or modern philology, is altogether foreign to the German mind. No professor of any department in the wide domain of knowledge acquires thereby a right or claim to any post of honor or emolument in or about the university. In almost everything connected with university matters the Germans — at heart more aristocratic than the English, and who have supplied half Europe with crowned heads — are the most democratic people in the world. Notwithstanding their proverbial fondness for titles and

* "L'Education des universites Allemandes commence ou finit celle de plusieurs nations de l'Europe." Mme. de Staël, L'Allemagne, Chap. XVIII.

† *Nation*, March, 1880.

distinctions which penetrates even the study of the *savant*, in the realm of science, whether orthodox or the reverse, whether classically or scientifically inclined, all men are practically equal. The *rector magnificus*, the post of honor at the head of the university, and the deans of the separate Faculties, — delegates, as it were, appointed by the members of the Faculties to represent them, — are in this republic of letters annually elected by their fellows, and at the end of their term of office fall back to their old position.

In the appointment and training of professors, the Germans differ from other nations perhaps more than in anything else, and this affects the very life of the universities as no other question does. There must be the utmost tact and delicacy on the part of the authorities making the appointment, with a "fair field and no favor" for all applicants. Even the suspicion of nepotism or "wire-pulling" must, as far as possible, be avoided. The appointment, when once made, should, on the one hand, be irrevocable, "for life or good conduct"; yet, on the other, leave no reasonable ground for the charge of monopoly sometimes brought against it.* This, then, is what the German system aims at, and what, with due allowance for human imperfections, it in the main accomplishes. We must here bear in mind the rivalry existing between the different universities, and the fact that they freely exchange not only students, but also tutors and professors. This and the system of *privat Docenten*, which has been called "a true lever of science" (ein wahrer Hebel der Wissenschaft), enable a young man to study pure science *professionally*, as law or medicine is studied with us. He lays his plans to become a professor in much the same way as his companions do to become doctors or clergymen. "By this arrangement," says Mayerhoff, "talent is afforded an opportunity for development." It is, perhaps, the most important one of the many causes that make Germany "the intellectual workshop of the world." That it should be so is not so strange, when we reflect that there are at this moment in Germany over 1,800 carefully trained men, whose professional duty it is to study science for its own sake, irrespective of its bearings on practical life, — men whose business is to philosophize, to think calmly, deeply, and systematically on all the problems of life; and who, to do this, enjoy the utmost freedom, barring practical political questions, where they are most restricted, — have liberty,

> "Withal, as large a charter as the wind,
> To blow on whom they please or what they please."

* In the German university of Dorpat, in Russia, when a professor has lectured twenty-five years his chair then becomes *eo facto* vacant, he however being eligible for re-election.

A year or so after graduating, our young aspirant for professional honors receives permission to hold lectures in the university, with the title of *privat Docent.* He may now soon become discouraged, as many do, and give it up; or he may inspire enthusiasm, establish good classes, and succeed. If he is fortunate enough to make his subject interesting and popular, when it was previously taught in a slovenly and careless manner, it is so much to his account. His income and prospects of promotion increase with his popularity.* A book, a pamphlet, or some original contribution to science, in due time, points out the rising man. If his alma mater fail to acknowledge evident ability and merit, by promoting him to the rank of "extraordinary professor," there are twenty-one other colleges in Germany, not to mention those in Austria, Russia, Switzerland, and Scandinavia, that are ready and willing to do so; for it is the interest of every university that wishes to rise or keep its place to be ever on the watch to receive and welcome men of promise.† Thus, when any famous professor dies, his place may in some measure be filled: there are at hand plenty of men who have not only made a name in science, but have spent years in patient teaching. Both these qualities can be taken into account by those making the appointment. This is done as follows: The names of three "extraordinary professors," the foremost men of Germany in their department, in the estimation of the men perhaps best able to judge, — namely, the professors in full standing, — are submitted to the government. Of these three, any one of whom would as a rule do honor to the chair, one is chosen. It is, of course, the interest of all concerned that the best man, the man whom cultured opinion in Germany approves,

* It is interesting in this connection to read Adam Smith's views: "In every profession, the exertion of the greater part of those who exercise it is always in proportion to the necessity they are under of making that exertion. This necessity is greatest with those to whom the emoluments of their profession are the only source from which they expect their fortune, or even their ordinary revenue and subsistence. . . . Rivalship and emulation render excellency, even in mean professions, an object of ambition, and frequently occasion the very greatest exertions. Great objects, on the contrary, alone and unsupported by the necessity of application, have seldom been sufficient to occasion any considerable exertion. . . . In other universities, the teacher is prohibited from receiving any honorary or fee from his pupils, and his salary constitutes the whole of the revenue which he derives from his office. His interest is, in this case, set as directly in opposition to his duty as it is possible to set it" — Wealth of Nations, Book V., Chap. I., Part 3.

J. S. Mill repeats much the same thought, thus: "The ideally perfect constitution of a public office is that in which the interest of the functionary is entirely coincident with his duty." — Representative Government, Chap. II.

† Over forty years ago, Prof. Mayerhoff, in a work on the history of German universities, wrote: "Activity is kept alive by the *privat Docenten;* the professors dare not relax their efforts, because their influence would then pass over to their youthful competitors, who are steadily working their way up."

should be selected; for here, as so frequently cause and effect go hand in hand, — numerous and renowned teachers drawing crowds of students to their college, and the best professors being desirous of going where there is most intellectual life and the largest number of students. This, it is said, leads to centralization, students and professors all tending to the large city universities. What the result of this may ultimately be is hard to say; but for some departments of study, and for the preparatory work of all, the provincial universities seem in the mean time quite capable of holding their own.*

But suppose our "extraordinary professor" to have received this appointment. He thereby gets a higher title, *professor ordinarius*, a better salary, a much better chance of attracting students, and certain minor privileges. But even now he cannot afford to relax his efforts: what has been won by his own ability and diligence in the face of all opposition must be held under the same conditions. In spite of immense advantages, the moment he becomes careless and indifferent and fails to inspire enthusiasm, he finds his lecture-room deserted and his influence declining. He has every motive to continual exertion; *semper paratus* must always be his motto.† The temptation to rest on his laurels and resign himself to the social enjoyments and honors his position affords is much less than with us, and he is seldom or never taken from the pursuit of science to attend to the affairs of state, as in England and France. A political career is rarely open to him, even if he wished to follow it; statesmen are recruited from another school.‡ For better or for worse these callings are, with few exceptions, kept strictly apart. The professor has more to do with theory, unapplied science, or general principles, and is regarded as a servant of science fully as much as a teacher. He is expected to keep not merely abreast of the time but ahead of it; he occupies his position as an acknowledged leader of men in his line of thought. Here, as elsewhere, possession is nine points of the law; yet if he visibly lags behind, there are others at hand who, using the ground he has won as a basis of operations and pushing their investigations farther, leave him behind in the race, till at last he takes his place on the pension list, removed from the jostle of those who have

* See an interesting discussion of this in "Aspects of German Culture," by G. S. Hall, Ph. D. (Osgood & Co., Boston, 1881), page 114, *seq.*

† Mme. de Staël observes of German professors: "Non seulement les professeurs sont des hommes d'une instruction étonnante, mais ce qui les distingue surtout, c'est un enseignement très-scrupuleux."

‡ Thus following in the footsteps of the Great Frederick, who, unlike Plato, is reported to have said: "If I wanted to ruin one of my provinces, I would make over its government to the philosophers."

outstripped him. Considering all this, we now comprehend the eagerness, the intense intellectual activity and generous rivalry, yet withal the calmness, regularity, and absence of all bustle and hurry, that are so characteristic of German university life.

The choicest intellectual life of the country is collected round the seats of learning: indeed, one might count on one's fingers the distinguished men of letters in Germany who have not been intimately connected with the universities. And as if to avoid the possibility of any talent in this direction being lost or cramped by being obliged to turn aside to practical life, men who in later life or in other professions make some worthy contribution to the cause of knowledge are frequently appointed directly as "honorary professors," so enabling them, if they wish, to devote themselves entirely to this pursuit. And though meanness and petty jealousies, as in all human affairs, interfere with the complete realization of this ideal, yet the best opportunities are offered to all who have a taste and talent for abstract studies to make the pursuit of them their profession. The universities are made to serve as homes for those who wish to investigate and teach, as well as for those who wish to learn.* They are made to combine — and in this lies perhaps their special excellence — "the continual union of investigation and instruction" (die stete Verbindung und Verschmelzung von Forschung und Unterricht), to use Von Sybel's phrase. Thus do these nurseries of science form places of refuge where teachers and taught may meet; where those who, content with a modest income, wish to devote themselves wholly to the study of abstract science, can do so, indifferent to the hasty judgment of the many, accountable for their opinions to none, unconcerned about the immediate applications of theory to practice, and unbiassed by fears or hopes to the probable consequences of what they regard as scientific truth; and where those who wish to think out deeply, fearlessly, and freely, and study impartially "the ultimate questions of life and conduct," may hear both sides and all sides from the lips of the acknowledged leaders themselves.

How have matters stood in this respect in England, France, and America? Helmholtz expresses his surprise that men like Humphrey Davy, Faraday, Darwin, Grote, and others should have had to fight their way alone, or that the universities should have lost the benefit of their teaching, methods, and experience. "On the whole," says Von Sybel, "the development of the sciences in England is accom-

* "It is merely the exception when the capacity for investigating and the capacity for higher instruction (Forsch- und höhere Lehrtüchtigkeit) are not united in the same person." — Prof. Roscher, System der Volkswirthschaft, Bd. II, page 543.

plished anywhere rather than in the universities"; and this taunt is acknowledged by Englishmen who have looked into the matter to be only too true. "Oxford," said Max Müller in a recent speech, "with its excellent material, the well-fed and well-bred youth of these islands; Oxford, with its many students that have not to work for their bread; Oxford, with its rich collections and libraries and fellowships, can do for the advancement of learning fifty times over what Giessen or even Leipzig can do." The question, Has it done so, and if not, why not? suggests matter for serious reflection. Prominent French and Italian *savants* speak in much the same way of their educational institutions as compared with German.* In America, it is true, learned men have occasionally obtained appointments allowing them a certain amount of leisure; but how far young men of ability and with a taste for abstract science can, without a large private income, make a life-study of a subject, irrespective of creed or party and unconcerned as to what, after candid and patient study, the conclusions they come to in that subject may be, every one knows.† Though theological seminaries may seem specially open to attack in this respect, they may, on the whole, be practically left out of account; for unless it is claimed that theology is being treated as a *science*, it is doubtless quite excusable to exercise the strictest supervision over the teachers of denominational colleges to see that nothing tending "to unsettle the minds of students" is taught. Here, however, what Helmholtz says in a wider connection holds true: "Do you wish to keep a branch of topics undiscussed, be it ever so remote, be it ever so small, be your object ever so well meant? In this case, your pupils must be kept closely on the prescribed path, and teachers must be obtained who will not kick against authority; but then you can scarcely talk of free conviction." But referring merely to the recognized sciences, if what Prof. Cliffe Leslie says in the "Fortnightly" for last October is at all true, there is much room for improvement yet. "No supporter of free trade, indeed," says he, in speaking of political economy in America, "could be appointed to a chair or get a class of students in Pennsylvania." Again: "At Yale College an attempt was made last year to stop the professor of social science, Mr. W. G. Sumner, whose name is honor-

* Among recent articles, see one by Lachelier in the *Révue Philosophique* for February, on "L'Enseignment de la Philosophie dans les Universités Allémandes"; and by Cantoni, in *Nuova Antologia* for March and April, 1881.

† "At the present time, it would appear that in spite of all the popularization of German thought and modes of thinking among the English-speaking peoples, Germany is the only country where one can think without paying a tax so heavy as not to be almost prohibitory." — DR. GEO. M. BEARD.

ably known in this country as well as in his own, from making use of Herbert Spencer's works, and the matter is not yet settled." Instances of this kind might be multiplied; indeed, it is even said that the representatives of collegiate freedom in America, Harvard and Cornell, have at times closed their doors upon men of sterling worth, and recognized authorities in this line of thought, simply on account of their theological opinions. To mention names here would be out of place, nor is it necessary. The facts remain that our best institutions, not to speak of the others, are far behind their German rivals in this respect; and that this is no question of secondary importance, but the one essential condition under which alone fresh, original, scientific work can be done. To see the place our universities take in the advancement of science, as compared with the German, one need only reflect how, in the philosophical and speculative sciences, — for these remarks naturally do not apply so much to the exact or practical branches of investigation, — the "epoch-making" discoveries of years ago are just now beginning to force their way into the universities; whereas in Germany, it is there they find their natural home.

That this state of affairs is eminently unsatisfactory, most thoughtful men will admit. If Bentham, Mill, Darwin, Spencer, and others had, while preserving their freedom, been brought into closer connection with the universities, one cannot help thinking that the advantages to both teachers and taught would have been incalculable. To some the pecuniary assistance would have been unnecessary, to others this early and honorable help would have been a godsend. Carlyle, to take one example, would, as we now know, have been freed from a gnawing care when penning the "Revolution," and trying to make ends meet by lecturing to private classes. In this way much of his future gloominess might have been avoided, while the accurate air of a university could not fail to exercise a beneficial effect on his weakness for generalizations. But all along wealthy colleges were spending the money that might have done this on scholarships, bursaries, fellowships, and what not, often for those who did not need them, while the practical experience and personal influence and power of scores of illustrious Englishmen was being irrevocably lost. As it is, hundreds of English students from all quarters of the globe, who would gladly have sat at the feet of Mill, Darwin, Spencer, Freeman, Froude, etc., have turned their footsteps in another direction, and are now listening to Helmholtz, Haeckel, Ranke, Mommsen, Roscher, etc.; for students are not blind to the advantages of a personal contact with such men, and this the printing-press can never supply.

The complaint of Thorold Rogers has surely some slight foundation: "The funds of our universities are so nearly exclusively employed in providing sinecures for the clergy, and in cheapening the highly refining process called 'gerund grinding,' that all students of science, whether it be psychological, physiological, molecular, or mathematical, turn to Germany chiefly for guidance in their investigations."

Defects in the university system of Germany have often been pointed out, but they are mostly on points of minor importance, the mere statement of which would unduly prolong this article; besides, as matters now stand, there is far more for us to learn than there is to find fault with.

It is impossible to close better than by borrowing the words of a writer who has spent over four years at four of the chief German universities, and who has made good use of his special opportunities for observation: "One of the grandest things about the German universities is that they are devised, unlike ours, as much for the education of the professor as for that of the student. Another is that unlike ours they are pure republics, with perfect academic freedom for all who can pass the required examinations to lecture upon any subject, and, with the slight political qualification mentioned above, from any standpoint. The result is that the student is brought into the close contact of the laboratory with the best professors, learns to feel through them the genial warmth with which new creations or discoveries arise in the intellectual world, and thus is saved from the danger of losing enthusiasm without gaining insight, — a danger to which all young men are liable, particularly if their teachers are drill-masters instead of being educators in the broadest sense." *

NOTE. — The academic year in Germany is divided into two sessions, the winter one lasting from the middle of October till the beginning of March, and the summer one from the middle of April to the beginning of August. Some weeks before the end of each *semester*, as it is called, the authorities issue the calendar in which the names of the lecturers, the hours and subjects of the lectures, and other details for the coming semester, are given. The one before me for the "Winterhalbjahr 1880–81, auf der Universitaet Leipzig," consists of eightly closely printed pages 8vo, the first thirty containing a plan of the lectures according to the faculties.

As Leipzig may be fairly taken as a representative university, some statistics concerning it may be of interest. The Theological Faculty begins the catalogue with 9 full professors, and 4 who hope to become so, but are yet in the transition stage of *privat Docenten*. The number of lectures in this Faculty is 24, besides 18 classes or societies conducted by professors, for debates, essays, and the like, on subjects within the department. Next comes the Faculty of Law, in which 10 full professors and 4 *privat Docenten* or tutors give 30 courses of lectures and conduct 7 societies, — one, for example, for drill in the Pandects, another on "Jurisprudentia Anteinstiniana," and so on. Medicine, next, has 98 courses of

* Dr. G. Stanley Hall, Aspects of German Culture, Boston, 1881, p. 120.

lectures, counting lectures proper and societies for drill together, with 11 *ordinary* and 15 *extraordinary* professors and 18 *privat Docenten.* The last Faculty, Philosophy, — by which the Germans generally understand more than we do, — is divided into several branches: A. Philosophy proper, with 17 courses of lectures and 7 societies. B. Philology, with 2 courses of lectures introductory to the study in general, which is subdivided into: (*a*) Latin and Greek Philosophy, with 13 courses of lectures and 11 societies for discussion; (*b*) Oriental Philology, with 21 courses of lectures and 4 societies; and (*c*) Modern Philology, with 17 courses of lectures and 10 societies for practice. C. History and Geography, with 15 courses of lectures and 8 societies. D. Art Sciences, with 6 courses of lectures and 4 societies. E. Economical and Political Sciences, with 22 courses of lectures and 4 societies for discussion and practice. F. Mathematics and Astronomy, with 14 and 3 as above. G. Natural Sciences, with 22 and 12. The whole Faculty has 43 full professors, 25 professors extraordinary, and 25 *privat Docenten.*

Thus there are 167 men of letters and of science, whose whole lives have been devoted to their own favorite subjects, engaged in giving over 300 courses of lectures and conducting 88 societies or clubs for mutual assistance and practice in the prosecution of certain branches. The number of students on the roll amounts to 3,326; the "hearers," with permission to attend certain lectures, 118. Of these, 474 are studying theology, 1,022 law, 465 medicine, and 1,365 philosophy. Distributed according to nationalities, 3,053 are German subjects, 223 belong to European countries outside of Germany, 48 come from America, and 2 from Africa. The previous semester there were 61 from America and 1 from Asia.

REAL EDUCATION: ITS PRINCIPLES AND A LITTLE-KNOWN CHAPTER IN ITS HISTORY.

BY WILLIAM JOLLY, H. M. INSPECTOR OF SCHOOLS.

III. Schools aiming at Real Education and Preparation for Life.

The scheme of education described in these papers was carried out in other schools besides the Edinburgh secular, whose working we have already seen; and the story of these attempts at providing a truer and more direct preparation of children for the efficient and happy conduct of life is both interesting and instructive.

Glasgow was specially active in promoting these broader views of the function of the school, and also in endeavoring to secure an efficient system of national education. In 1850, several friends of George Combe, who had been variously engaged in efforts at extending and improving education, founded the Glasgow Secular School Society, the most prominent members being Mr. James McClelland, well known in the Social Science Association; Prof. Nichol, the eminent writer on astronomy; and Mr. Richard S. Cunliffe, long honorably connected with Anderson's College of that city, — all now gone over to the majority. This society established three schools on the model of the Edinburgh school, two of which were very successful.

The first was opened in St. Andrew Square, and was carried on for six years, chiefly by two brothers Bennett, one of them now a clergyman in Paisley, the other editor of the "Dunbarton Herald" till his recent and lamented death. The subjects taught included the usual branches, along with object lessons in the infant department as "an introduction to the sciences," physiology, social economy, phrenology, "the natural laws" in their relation to man's nature, as developed in George Combe's "Constitution of Man," and systematic instruction and training in the principles of morals. It was attended by an average of one hundred and fifty scholars of all sects, and was very successful.

Their second school was carried on in Carlton Place, chiefly by Mr. John Mayer, who gave an interesting account of it in 1866, before the Manchester meeting of the Social Science Association. The average attendance was from one to two hundred boys and girls, and the school was supported by fees and the contributions of its friends. It was carried on with great success for nearly twenty

years, till 1872, when the passing of the Scotch Education Act secured many of the aims of its promoters, though certainly not the curriculum. This curriculum was similar to that of the Edinburgh school, and like it, excluded all theological instruction, while bestowing the most careful attention on religious training, as already explained, which was one of its prominent objects. It included physiology and social science from the first, and ultimately a wide range of scientific subjects, chemistry being a favorite study. Yearly reports were issued, containing interesting and valuable matter. The success of the special features of the school is testified to, amongst others, in an able series of papers in the "North British Daily Mail," by Mr. Robert Somers, afterwards issued as a pamphlet in 1857, in which the school receives the highest praise for both matter and method of teaching, saying that "such completeness of arrangement and such extension and breadth of study are rather an exception, of course, than the rule in the common schools of Glasgow."

In Leith a similar school was opened in 1853, expressly founded on the plan of the Edinburgh school; care being taken, according to the prospectus, to "give the education a practical tendency, which must prove highly useful to the pupils in after life." It was for five years known as the "Leith Secular School," but after 1858 as "Hay's Mechanics' School," from its chief promoter, Mr. James Hay, a well-known liberal citizen of Leith. It was taught by Mr. William Ellis, who had been trained in the Edinburgh school, and was carried on like the Glasgow school till 1872, the year of the Scotch Education Act. In spite of misrepresentation and opposition, the school did great good to large numbers, and received favorable yearly reports. Since 1872 the school-room has been used as a reading-room for the workers in the Leith Roperie, in whose premises the school had been carried on from the first.

Honorably vying with Edinburgh and Glasgow in this good work, a third centre of enlightened educational activity was the great cotton capital of England. In 1846, when the celebrated original Minutes of the Committee of Council on Education were issued, a number of earnest-minded, public-spirited men united together to demonstrate by local effort what a truly national system of education ought to be: unsectarian, free, "secular," and Real, under governmental and local managements. In 1847 they issued a "Plan for the Establishment of a General System of Secular Education in the County of Lancaster"; a remarkable document, broad and advanced, which will always be a monument of the enlightened public

spirit of Manchester. They soon after founded the Lancashire Public School Association, to carry out these objects, broadening their basis in 1850 so as to apply to the whole country, under the name of the National Public School Association. This organization comprised an honorable list of eminent men, since better known in the educational and social world, whose names are too numerous to mention, — Dr. John Watts, who still survives in Manchester, deserving special praise; Cobden, also, being most active, and W. E. Forster, then commencing his great educational career. They began a long series of efforts in favor of their ideas, in public meetings throughout the country, publications on the many points at issue, educational committees and parliamentary bills, all carried out with indefatigable energy till the passing of the English Education Act of 1870, which was based on their own bills and embodied many of their ideas. One of the best results of this agitation was the foundation of certain schools in and around Manchester, exemplifying the education they recommended.

One of the most energetic workers on George Combe's educational lines was Mr. John Angell, now senior Science Master in the Manchester Grammar School, who had received his first inspiration in the first Birkbeck school in London, and had gone to Edinburgh to study the system carried out by Mr. Williams there. He successively conducted several schools in Manchester and neighborhood, expressly based on the Edinburgh model: the National Independent Odd Fellows' Secular School, opened in 1851, the Salford Mechanics' Institution School in 1853, and the Manchester Mechanics' Institution School in 1857. All these seminaries carried out the Realistic course of training and instruction identified with the secular schools; their aim being, as put by Mr. Angell in his early prospectuses, "to afford a sound practical English education of a higher character, more thoroughly useful and practical than common." The subjects included, besides the usual branches, lessons on objects, chemistry and other sciences, physiology and the laws of health, and social science, "because of their immediate bearing upon the happiness and well-being of society, . . . in order that the children might understand how much their health, longevity, and general happiness are dependent upon themselves, and that they might also the more fully comprehend their position in society and their duties towards it." Mr. Angell is a man of unusual ability, and sound, enlightened views on education, as shown by his labors and publications. He early became imbued with George Combe's principles, to whose memory he continues to cherish the most loyal attachment. He

was one of the earlier introducers of science into schools, and has long advocated its more systematic and extended teaching there; its true method being very well put in a paper on "Science Teaching," read before the College of Preceptors in 1873. His conduct of the above schools was very efficient, the French Education Commissioners of 1851 reporting on it, amongst others, in the highest terms. The Salford and Manchester Mechanics' Schools are still successfully conducted, but have largely ceased to carry out their original features when under Mr. Angell, who entered the Manchester Grammar School in 1869.

The more energetic of the members of the National Association of Manchester, wisely determining to exemplify the principles they advocated, established a school in 1854 called the Manchester Model Secular School, known after 1861 as the Manchester Free School. The school was organized and conducted for ten years by an uncommon type of man, Mr. Benjamin Templar, who did so much by pen and work to spread the principles of Real education, and whose recent sudden and unexpected death at Southport is a great loss to education. The school was intended, as its name indicates, to be a model of what a national public school ought to be: free, "because supported by local rates, instead of by voluntary contributions and school pence"; secular, as excluding theology, though training the religious and moral faculties; unsectarian, as unconnected with any church; and Real, as preparing for life. The subjects were of the same practical character as in the rest of these schools, embracing a broad range of natural science, especially physiology and social economy, which were systematically taught to all the children from the first. Moral and religious training was a special feature, striking and instructive examples being given in Mr. Templar's works, especially in his "Ten Years' Experience of the Manchester Free School" and "The Religious Difficulty." The school was eminently successful. The excellence and attractiveness of the Realistic instruction and training given is shown by the fact that the percentage of attendance was unusually high, ninety-three per cent, though the pupils came from the lowest parts of the city and were taught free. Mr. Templar ceased connection with it in 1864. It is still successfully taught, receiving high reports and corresponding grants from government; but many of its special earlier features now no longer characterize it, — a matter of great regret.

George Combe had a very intimate friend in Dorset, with kindred tastes and humanitarian aims, whom he used frequently to visit, —

Mr. Thomas Horlock Bastard, of Charlton Marshall, near Blandford. Mr. Bastard held similar strong ideas of the potency of Real education in the improvement of mankind, and of its existing imperfections as a means for that end and as preparing for the business of life. He therefore determined, like others of the same enlightened circle, to illustrate practically, as far as he could, the kind of instruction he wished to be universal. In 1861 he issued a prospectus of a new school for both sexes, — an alarming innovation in that part of the country! — to be erected by him in Blandford, in his neighborhood; in 1862 executed a deed for its permanent endowment; and opened it in 1864, under the auspices of Sir James Clark and like-minded friends. It was made a "special condition that whatever subjects are taught, physiology, in connection with the laws of health, shall be a prominent branch of education in the school." It was also "recommended — without its being made an absolute condition — that economic science, in illustration of the laws of industry and wealth, shall be another branch of education; and that the practice of needlework, housework, and gardening shall be systematically pursued, with the declared design of teaching the *dignity* of labor, encouraging healthful exercise, imparting general skill and handiness in the every-day needs of life, and practically training to *self-help*," — it being also wisely provided that the instruction shall be subject to revision every ten years, so as "to keep the school and its teaching in accordance with the progress of the age." Mr. Bastard freely and generously attributes all he has done in education to George and Andrew Combe, and to his friend William Ellis, of London. As still further testifying his gratitude to the brothers, he erected a public pump, a boon in these chalk regions (opened the same day as the school), on which a tablet states that it is dedicated to the memory of his "esteemed friends" and "of their zealous efforts to diffuse knowledge of the human constitution and of the laws of nature, as conducive to the preservation of health and the advancement of morality": the only public monument yet erected to the memory of these good men and lovers of their kind, away down in distant Dorset, not one existing in their native country! Mr. Bastard has also decided views on the important mutual influence of the sexes in education and life, holding that they should be much more associated than they are throughout their whole education, from the infant school to the university, and in after social relations, in which the mistaken prudery and unconscious injustice of the British mind on the question keep them unnaturally apart, to great individual and social detriment. In order to carry out these views,

he erected in 1855 a laborers' club, one of the first in the country, in which one third of the members are females. Mr. Bastard still lives, ripe in years and wisdom, superintending his various educational and social agencies; one of the last of the band of philosophical educationists who, amidst misrepresentation and social persecution, set themselves to work out the most practical solution of certain educational problems yet exhibited in the world.

One of the most remarkable and enlightened educational efforts ever made was carried on by that singular, ill-understood, misrepresented, but noble man, William Lovett, the Chartist, whose story, as plainly but powerfully told by himself in his autobiography, called his "Life and Struggles in Pursuit of Bread, Knowledge, and Freedom," is one of the most inspiring kind of books, full of noble thought and nobler action. Lovett was the best and most prominent representative of the higher form of Chartism, that of the moral-force Chartists, who have led the way in many paths of social and political progress, and were strenuously opposed to the low physical-force Chartism of Fergus O'Connor and his associates. With rare and early insight into the true state of the problem of raising the laboring classes, and of preparing them for political functions by making them worthy of them, physically, morally, and intellectually, they advocated a thorough Real education of the people. Lovett's appeals and labors alone, in this one of his many fields of action for the good of his fellow-men, should form an important chapter in the history of the people, which I can only briefly indicate here.

In 1837, with clear-sighted prescience, he issued an eloquent and powerful address to his fellows of the working classes, advocating a better and broader education as one of the strongest levers to raise their condition, and recommending the appointment by Parliament of a committee of public instruction, and the establishment, throughout the country, of normal, infant, preparatory, high, and finishing schools and colleges, with evening schools for after-education; a scheme foreshadowing subsequent legislation on education, and one which yet waits for completion. After his release in 1840 from Warwick Jail, where he was most unjustly thrown and most cruelly treated for his part in the agitation for the Charter, he published a similar address, in which he also described the machinery for carrying out the scheme by the formation of public halls or schools for the people, in all parts of the country, for carrying on schools, lectures, discussions, and entertainments, as well as agricultural and industrial classes; with play and pleasure grounds, baths, museums, laboratories, and workshops, and the offering of prizes for essays on

education. This proposal, like all good things too advanced for their time, met with opposition from many and neglect from most. But Lovett, never daunted by failure or silenced by abuse, took personal action. Assisted by some liberal friends in the higher ranks, — of whom he had not a few, charmed by his moral wisdom and earnestness, — he fitted up a large chapel in Holborn, London, which was opened in 1842, under the name he had proposed, The National Hall, in which a great part of his programme was carried out. Here he soon opened a Sunday school, in which, as he tells us, "free admission was given to all who came cleanly in clothing and person, the subjects being reading, writing, arithmetic, grammar, and geography, with such other kinds of information as were in his power to bestow." This strange Sunday school lasted for four years, taught by himself and some of his friends. Though prevented for a time, from the want of funds, he at length succeeded in establishing, in 1848, the highest agency in connection with this attempt at elevating the people, — a day public school for both sexes, which opened with a hundred scholars, and soon increased to double that number. Its aim, according to the prospectus, was "to provide for the children of the middle and working classes a sound, secular, useful, and moral education, — such as is best calculated to prepare them for the practical business of life, to cause them to understand and perform their duties as members of society, and to enable them to diffuse the greatest amount of happiness among their fellow-men." The subjects taught were similar to those already described, including physiology and social science, the facts of trades and manufactures, natural history and other sciences, drawing, and vocal music. Social science was taught by William Ellis, who had the highest respect for this despised Chartist, and did not disdain to unite his own efforts with his in improving education, assisting also the indigent philanthropist with his ever-ready purse. Here also Lovett had the distinguished honor, in 1848, of being the first to teach physiology in a common school, and of publishing, in 1851, the first text-book for schools on the subject, "Elementary Anatomy and Physiology for Schools and Private Instruction," which received high praise from various journals, including the "Lancet." He also taught the subject in the Birkbeck schools, then recently opened, not only to the scholars but to the teachers there. In 1849, the school was visited by George Combe, who had previously been in correspondence with him in regard to it, and who then described it in the "Scotsman," and continued to watch Lovett's labors with interest and encouragement. At first it was taught by a male and female teacher, under his own superintendence; but in 1851, after his second

teacher left, being unable to find a suitable successor, the pure-minded enthusiast, then above fifty and in feeble health, — which had been impaired by his jail experiences and abundant labors for his fellows, — became the teacher himself, and conducted it successfully for six years, until compelled to abandon the work by the hall being unjustly wrested out of his hands to become a public-house of a very different kind. He, however, continued his efforts for the public good on till his obscure death, so recently as 1877, teaching physiology in the Birkbeck and other schools, carrying on various literary labors, issuing fresh, noble appeals to his regardless countrymen, and framing text-books on astronomy, zoölogy, and geology, which never found a publisher. William Lovett was beyond question one of the most enlightened of British educationists, perceiving long before most, its existing defects, possessing a rare insight into the true nature and aim of the process, and pointing out the true means for its regeneration and improvement. His views are so admirable in themselves, and so clearly expressive of the purpose of all Real education, that we shall do well to ponder them, as expressed in his last address to his fellow-workingmen at the conclusion of his autobiography, which is pregnant with high practical wisdom and enlightened advice on most social problems: —

"Aim, I would beseech you, to secure a proper education for your children. The education you should aim at is not merely the old routine of reading, writing, and arithmetic, or such mere technical knowledge as shall enable your children to become more efficient tools of production; but such as shall serve to prepare them to stand on a footing of equality with others, and possessed of such knowledge and such moral training as shall fit them for a life of industry and usefulness, so as to be a blessing to themselves and their country. To this end, they must not only be able to read and write and cipher, but to acquire some knowledge of their own nature, of the world they inhabit, of the existences they are surrounded by; a knowledge of the conditions of social and political life, and rules of conduct on which their well-being chiefly depends; together with the outlines and rudiments of science, which form the foundation of those arts and manufactures that contribute to the prosperity and happiness of our country. In the pursuit of those attainments, there should be little difference made between boys and girls, seeing that women are destined to have the first and chief hand in moulding the minds and characters of our people; excepting that girls should be taught at school to make and mend their own clothing and to cook their own food, — qualifications of the first importance to promote the well-being of a family."

But the greatest achievement in Real education still remains to be described, — one happily which, unlike most of the excellent efforts already spoken of, has not passed away, but will be permanent, being endowed for all time, — the Birkbeck schools in London. Their founder, who still survives at the ripe age of eighty, is a most remarkable man, whose name has already been frequently mentioned, — William Ellis, one of the earliest, most enlightened, indefatigable, philanthropic, and generous of our educational pioneers. Early devoted to the amelioration of the condition of the people, he perceived, like all earnest men who have looked into the problem, that the strongest lever to elevate them is an efficient Real education; and that of the things requiring to be taught to them, nothing is more necessary than instruction in the "conditions of human well-being," the principles at the basis of all moral, commercial, social, and economical phenomena, as systematized in moral, social, and political economy, now better known as social science. He therefore set himself to its thorough study, with the special aim of rendering these so-thought abstruse subjects simple and practical, in view of their universal teaching in school to even young children. This he has admirably achieved in a series of works, representative specimens of which are "Progressive Lessons in Social Science" and "Religion in Common Life." Social science, as treated by Mr. Ellis, differs from what it is in most text-books on social and political economy, and has become under his hands, as already said, what is practically a new science, which brings to bear on itself the whole of the mental faculties, the sympathetic as well as the self-regarding: "a correlation," as Dr. Leverson, the American author on the subject, says, "first illustrated by the teachings of William Ellis, which has been more or less successfully followed up by his disciples; so that to-day, when properly taught, instead of warping the minds of its students into a one-sided egoism, it develops a largeness of views, a generosity of sentiment, and a soundness of judgment, perhaps unattainable through any other study." *

Mr. Ellis early began its teaching in schools, his first attempts being made in 1846, in a British school in Camberwell, and in 1848 in Lovett's school, as just told. He was agreeably surprised at the ease with which it could be taught, and the interest and pleasure it excited in even young children, and he has ever since devoted himself to expounding and teaching it for educational and popular study. His pleas and pleadings for it as a subject of national importance,

* See Kiddle and Schem's excellent "Cyclopædia of Education" (*s. v.* Social Science). E. Steiger & Co., New York.

that should be peremptory in every school, are earnest, eloquent, practical, and powerful.

Like his friends, the educational reformers of this narrative, he was a practical man, and anything but a dreamy enthusiast. Knowing that talking, however wisely, is powerless without doing, he determined to put his scheme of school instruction into practice by founding schools for carrying it out. He therefore entered heartily into a scheme for founding a school for Real education in connection with the London Mechanics' Institution; Mr. Williams, afterwards of the Edinburgh school, being secretary of the school committee. Chiefly through Mr. Ellis's liberality and assistance, the school was opened in 1848, — the first of the Birkbeck schools, so named, after the great Dr. Birkbeck, the founder of mechanics' institutes, and one of the earliest of popular science lecturers. The course of study was similar to that of the schools already described, but in addition to mathematics, mechanics, and the physical sciences, special stress was placed on physiology, so as to make the children "acquainted with the laws of their own organization, in order that they might understand how much their health, general energy, physical happiness, and length of life are dependent on their own conduct"; and most on social science, in order that, as the prospectus of one of the schools puts it, "the children may not go forth to take their part in the work of the world utterly ignorant of any safe guides of conduct: this teaching including, among other things, the knowledge of the laws relating to the production and distribution of wealth, the means by which wealth is made to accumulate, the advantage of division of labor and interchange, the laws which regulate wages and profits, the causes of variations in values and prices, the nature of the means adopted to facilitate interchange, but above all the courses of conduct which ought to and must be followed, in order to secure future happiness and well-being."

Mr. Ellis has, in succession, founded and endowed other schools on the same principles, naming them all Birkbeck schools, except the last, the Gospel Oak schools; thus magnanimously and characteristically subordinating his own name and work in connection with them. In this way, at an immense outlay, he has established seven schools in all, of which four still exist and flourish, permanently and handsomely endowed, — the Cambridge Road, the Peckham, and the Kingsland, Birkbeck schools, and the Gospel Oak schools in Kentish Town. In these, the subjects still taught and secured by their constitution are much the same as in the first Birkbeck school; including, besides the usual subjects in the infant and higher schools,

physiology and social science (which are the staple subjects of the school, taught from the first), the elements of the physical sciences, vocal music, drawing, Latin to those wishing it (the classics being put aside), as well as French, German, piano, and dancing to those that want them, industrial work and domestic economy to the girls, and physical training in well-equipped gymnasia to all. Each school possesses a full staff of teachers, male and female, numbering in some cases above a dozen, and includes an efficient infant department, in which also the social and physical subjects of the school are simply but systematically begun, as in the Edinburgh school.

The school-rooms are spacious, well lighted, well ventilated, and amply supplied with all the modern improvements in educational furnishings existing when they were founded, though wanting in the more recent. They are also characterized by special admirable features in their work and discipline, similar to those already explained in connection with the Edinburgh Secular school; such as the discouragement of rote lessons, the training of the faculties by objects and by their exercise on the subjects taught, the banishment of prizes, the discouragement of a spirit of rivalry, the fostering of a love of knowledge and progress for their own sakes, the careful training of the moral and religious powers by means of all the subjects studied, and the minimum use, or, as desired by their founder, the total abolition of corporal punishment. The methods of teaching embody several peculiarities worthy of general application, — notably that known as "Socratic questioning," established by Mr. Ellis, and already alluded to as practised by Mr. Williams. The schools continue to be most successful, and the attendance is very large, though it somewhat decreased after the erection of the excellent Board schools, with their much lower fees.

George Combe and William Ellis were long intimate and dear friends, cherishing similar views on philosophy, education, and social advancement, encouraging and assisting each other in their abundant philanthropic, but little known and less appreciated labors for human well-being; and George Combe frequently visited, described, and recommended the Birkbeck schools at a time when they were new and misrepresented.

Other schools have existed in this country carrying out a course of education similar to the foregoing, and teaching the same subjects in whole or in part, of which those founded by the Dean of Hereford at King's Somborne deserve honorable mention, Dean Dawes himself being an advanced and enlightened advocate of social science, for universal teaching in school and for the training of teachers.

As will have been seen from even this necessarily meagre sketch of the foregoing interesting educational institutions, their chief aim and peculiar merit were their endeavor to work out practically the central conception of Realistic education advocated in these papers: that of imparting a knowledge of man and his environment, and preparing for life, while exercising as broad a range as possible of the faculties, physical and mental. This was the chief end of the education imparted, and to this all else was subordinated. The subjects which related to this aim were therefore made the staple work of the school, and the scientific subjects, especially physiology and social science, were not regarded as supplementary or higher subjects, but were systematically taught from the first. These schools may thus be truly characterized as preparatory schools in the best sense, — that of preparing, fitting, and equipping for after life; and may be shortly designated life-preparing, life-fitting, or life-equipping schools.

In none of them, however, was the mental constitution of man studied with equal care and systematic instruction as in the Edinburgh school, in which it formed a marked feature of the teaching, as was to be expected from its connection with the great phrenologist. In most of the others it was, from various causes more or less obvious, attended to less than its importance educationally and practically entitles it to. It is a subject which, for every reason, will some day become universal, along with physiology, hygiene, and social science, when our school curriculum is based on sound philosophy and practical wisdom in truly educating our children and preparing them for life.

Of course, in all of them, the common subjects — reading, writing, arithmetic, mathematics, and English in meaning, grammar, and composition — were carefully taught; but chiefly as instruments for the acquisition and investigation of Real knowledge. Their training power in exercising the mental faculties was of course fully recognized and acted on; but less time was bestowed on them than in schools in general, even for this higher end, because the promoters of the schools held that a much better mental training and gymnastic could be obtained through scientific subjects, especially the humanitarian sciences, — a position which is now held by some of the most eminent authorities, and which begins increasingly to be perceived, — while their utilitarian value in a Realistic course of study is superadded to their training power. Geography and history were taught as part of the general scheme, contributing to the knowledge of man and his surroundings. The exclusive or overstrained atten-

tion to foreign languages, classical and modern, they strenuously discouraged, and their promoters were amongst the most vigorous and effective opponents of the domination of linguistic studies in school, and were amongst the earlier champions of emancipation from their sway. So decided were their views on this point that classics were not taught by them at all, except Latin to some in the Birkbeck schools, these subjects being viewed as not required for general use and only for certain professional men, and the training afforded by them being better obtained through other subjects. Modern languages were more encouraged, for the sake of intercourse and business, as well as for their literature and science, and their training in linguistic and philological studies. Of course, in the secular schools, even these modern languages were not taught, from their being attended chiefly by the children of the lower and lowest classes, the Birkbeck schools being the chief exception.

The fact of this new attempt at a higher and truer education being begun and so successfully carried out amongst the children in the lower strata of society is an important consideration. It proves the natural interest of the course of study pursued, involving though it did so much of so-called abstruse science, and is an evidence of its excellent training effects, and the educative and instructive character of the teaching. It affords a practical proof of the success of the scheme of instruction, and of its adaptation for universal practice in our schools. Its moral and intellectual effects, also, on the subsequent conduct of the children who had passed through it, have been carefully inquired into, and found to be superior and most encouraging; of which details have been published from time to time in reports and papers* on the schools, — facts that form a striking and valuable practical testimony to the nature and tendency of the training and instruction given.

The year when these schools were first founded, the memorable 1848, is both interesting and important in relation to their aim as educational institutions. As already noted in these papers, their main purpose was to provide an education which should directly tend to raise the mass of the people in morals and intelligence; should impart true knowledge on the many problems of practical life which the French Revolution had rendered prominent in relation to the body of the people and their increasing influence and power of social and political agitation; and should prepare them for the exercise of social, civic, and political functions, by rendering them worthy of them

* See specially Mr. Templar's "Ten Years' Experience of the Manchester Free School" (Manchester, J. Heywood), and Bennett's "Plea for Secular Education" (Trübner).

through a more generous, useful education and practical training in school. It is there that chiefly or exclusively the masses can ever have an opportunity of gaining this, and there alone their minds can be awakened and strengthened to profit by other public means of instruction in regard to them, through lectures, books, and other agencies. The date of the establishment of these schools is thus an additional proof of their earnest, practical, public-spirited aims for general enlightenment and progress; while the utterances of their chief promoters, Combe, Ellis, and Lovett, have dwelt prominently on this aspect of their joint labors, and are valuable and eloquent contributions to this most practical and important aspect of the education question. These schools were opened in the Revolution year, in the following order: Lovett's National Hall School on the 28th of February, the first Birkbeck school on the 17th of July, and Combe's Edinburgh school on the 4th of December; Lovett thus having the priority in time, if not in intention.

The other chief characteristics of the schools may, in conclusion, be briefly enumerated. On the intellectual side there are, their making scientific teaching an integral part of the instruction from the first; the prominence given to the humanitarian sciences as an essential part of youthful education; their fostering Real instruction and subordinating linguistic studies; their improved methods of teaching, based on the science of education; their aiming at a full development of all the faculties by instruction and training, chiefly through *things*, the *real* objects on which the faculties act; their discouragement of appeals to mere memory; the small amount of task-work exacted and the subordinate use of text-books; their endeavor to generate in the children "a scientific habit of mind" from the first; and their general, broad, and skilful feeding and exercising of the mental powers, with appropriate instruction and training.

On the moral side, they were distinguished by their earnest and careful development of the moral and religious faculties, while excluding mere theology from the sphere of school work; their constant recognition of the sacredness of science and its laws, as divine revelations and commands for the regulation of the conduct; their superior and unusual discipline, which sought to dispense with all corporal and degrading punishments, and to govern by skilful appeals to the feelings and intellect; their disuse of emulation, prize-giving, and place-taking, and discouragement of appeals to the love of approbation and the selfish propensities; and generally, their making moral and religious training one of the chief aims of education.

These and other features at once stamp these schools as remarkable, if not unique. They show that they are capable of helping towards establishing the education of our children on a scientific basis, with a realistic, human, and life-relating philosophical purpose, their system being all the more valuable that it has not been theoretic and bookish, but has been practically, successfully carried out now for thirty years; and of being worthy models, as they claimed to be, of what national education should become. At the very least, their solutions of certain great educational problems, now and ever affecting the happiness and progress of the people, merit the earnest attention of all students of education, which it is devoutly to be hoped they will receive; for they undoubtedly embodied, — to use the words of Prof. Hodgson, one of their most earnest promoters, whose recent death is one of the greatest losses sustained by education for many years, — "a higher, wider, clearer, more definite, practical, consistent, and inspiriting view of education, as it ought to be and will be." *

* The subjects treated in the foregoing papers are fully and ably argued by the great philosopher, and the history and working of the "secular schools" given in detail, in "Education: Its Principles and Practice as developed by George Combe," lately published, edited by the writer. (London: Macmillan & Co.).

RELATION OF ACADEMIC TO PROFESSIONAL WORK.

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FEW questions in reference to normal schools are of such immediate and vital interest as the one concerning the proper relation of academic to professional work. It is too large a topic to dispose of satisfactorily, in its whole compass, within the reasonable limits of one paper. It includes, in its widest signification, the very definition of a normal school; and one's ideas in reference to the scope of normal-school work will be different according as one views this problem. If one considers that there is a vital relation between these two things, one's school will have a far different form from what it will assume if one takes the view that the relation is merely incidental.

Let us for the sake of clearness glance at the meaning of the question, What is the distinction between academic and professional work? In a general way, academic work is that which is directed mainly toward the acquirement of knowledge, — or, with immediate reference to our subject, that directed toward acquiring the subject-matter of teaching; while professional work is mainly directed toward acquiring a knowledge of the methods and system of imparting knowledge, — or, if it please you better, of training the human mind.

Thus, the course of our normal schools may be divided into two distinct portions: the professional work includes the observation of teaching, the study of the theory and the history of theories of teaching, mental philosophy, and the actual practice of engaging in the work, under the supervision of competent critics; while the second division includes everything else taught, such as geography, arithmetic, algebra, etc., so far as they are included in our courses.

Now, as normal schools lay claim to be professional schools, why do they not devote themselves exclusively to the professional work? Why not exclude those studies which have to do solely with the subject-matter? Why not presuppose this, and, requiring it as a preparation for admission, press on toward the attainment of the real end of normal schools, — the training of candidates for teaching in the principles and methods of the teacher's profession? These questions, if they have reference to the past alone, are easily answered. The early normal schools had to choose one of three courses: 1, exact

at admission an examination on the subject-matter required in our schools; or, 2, give the best instruction in teaching they could, letting the previous work be what it might; or, 3, give instruction in the subject-matter themselves. To have done the first would have been to close the schools before they were opened; no set of sane men would have thought of doing the second; the third choice consequently was the only one left, and we therefore find all our normal schools engaged to a greater or less extent in the work of academic instruction, and the defence of that work has been thus far mainly one of necessity. Its apologists have ever left the impression that it was a mere means of transition from one state to another, and have tacitly promised that as soon as possible the academic part should be omitted; that as soon as our common schools and academies should be able to furnish instruction in the academic work, the normal schools would limit themselves to their own peculiar sphere, — that of training in the principles, history, methods, and practice of teaching. Now, it is just here that I wish to take up this question. I do not care to discuss the point, whether it be possible in the present state of education to have a normal school without an academical department. I do not care to investigate whether a purely professional school would not disarm much of the criticism which we hear from every quarter, and all the time, against our normal schools. These are practical and very important questions, oftentimes involving the very existence of particular institutions; but I prefer to press on to what seems to me the vital point so far as the theory is concerned, — viz., what are we to consider the desirable end toward which we are to work? Shall we place before us as our ideal a normal school occupying itself solely and exclusively with that which, in the narrower meaning of the term, is included under professional work? I say within the narrower meaning; for I hope to show, before I finish, that acadamic work is really professional work. Would, then, a normal school without academic work be as good as one with it? If it were possible to get our public schools, or our academies and private schools, to afford the requisite knowledge, ought we to strive for that with a view to eliminating that element from our work? This is, as it seems to me, the real question at issue. It is the subject of this paper.

I shall take it for granted that the chief work of our normal schools is to train teachers for our public schools. It is not their business to train teachers for our colleges, or our higher schools in general. Not that instruction in teaching is unnecessary for college tutors and professors, — most of them would be all the better for a

normal-school training,—but that the public, which establishes and supports normal schools, does it for the benefit of the free-school system of the country, and expects that the graduates of these institutions will devote themselves to public-school work.

I shall further take it for granted, without any discussion, that in some school or other the knowledge of the branches taught in our public schools must be acquired, either before or at least simultaneously with the professional work and training. There is no use in trying to engraft professional work on academic ignorance.

Starting out from these assumptions, then (which I take it will not be seriously disputed), my first position is, that mere knowledge of a subject does not imply a power to teach it. I need not dwell upon this statement: we have all known men who, though thoroughly acquainted with the subjects they pretended to teach, were utterly unable to impart their own knowledge, or even to get their pupils to master their text-books; oftentimes through natural inability to teach, still oftener, perhaps, through an ignorance of methods and means. How often do we hear, "He knows enough about it, but he can't teach it"! But we may go still further and say that mere knowledge, with some general idea of methods of the theory and art of teaching, will not qualify one to teach any given subject. Even instruction in the proper methods of teaching some one branch, as for instance arithmetic, is notoriously unsuccessful in accomplishing good results, unless it be immediately followed up by actual work under the supervision of a competent critic. Teaching is an art as well as a science; and while instruction in any one department of the work renders the instruction in other departments easier, it does not render it the less necessary. And here, I claim, is the very point which every normal school should emphasize. No young men or women should be graduated from these institutions and sent out to the public-school work of our country until they have been taken carefully over the ground they are expected to cover in their teaching, or the teaching of which they are expected to supervise.

Our normal schools are of no more value than other good schools if their graduates are not able to go out into school work, and take it up far in advance of those who, with equal knowledge and more extended courses, have not given attention to the principles and methods of teaching. The great difference between a normal-bred teacher and another lies in the greater ease which the former finds in teaching any given subject, or in supervising that teaching. If a man has never taught arithmetic, for instance, he may be no competent judge of success or failure in the work. I have in mind now

a superintendent of a large city — a graduate of one of our largest colleges, a teacher of nine years' standing — who is consciously unable to judge of the character of the instruction in the lower grades. He knows, of course, when a teacher gets along easily and is liked by her pupils; but as to whether she uses the best methods in her work, he is unable to decide. This point is an important one, and is too often neglected. A teacher must have made a special preparation for each branch taken up. A good Latin teacher may be a poor geography teacher, a good geography teacher a poor arithmetic teacher, etc. Any one who has the making of a good teacher in him may of course get all this experience by himself; but his pupils, in the mean time, are his victims. The main object of professional schools in every department is to give the student that training in principles and methods which shall preserve the community from the evil effects of malpractice. The chief aim of a medical school is to give its students that experience and knowledge which they could otherwise get only at the expense of their patients. A normal school ought to put a man, at the very threshold of his career, where he could have only come after years of effort and mistakes if left to himself; and if it does not do this, it has no right to exist.

Now, how can the normal school reach this in the best manner? Let us see how it attempts to reach it.

We find that the curricula of our normal schools embrace under the head of professional work, first, the theory of education, including an examination into the constitution of the human mind and its relations to the outer world; also a review of the principal educational theories, with a consideration of the life and methods of eminent educators; some general study of the characteristics of a good teacher, of general school management and school discipline, etc.; of instruction as a whole, and the various other points included under the head of the theory of teaching. We find further what we might call specific theory and art; *i. e.*, the consideration of the proper methods of teaching individual branches, as geography or arithmetic, — a very necessary part of every extended normal course. As a third important point we find observation of actual teaching, done by professors or by pupil-teachers under the direction of professors in the normal school. This is one of the most valuable, if not *the* most valuable exercise connected with the work; especially valuable, because it affords opportunity for a good deal of individual instruction on important points. Finally, actual teaching by the normal pupil crowns the professional work, although it is often done before the final theoretical and historical work is com-

pleted. Ordinarily one year's work of three terms is the maximum of actual teaching. By varying the branches a pupil may get some experience in teaching three different branches. But he rarely gets training in more than three, and commonly not in more than two different lines of work.

Now, the more nearly a normal school affords training in all the branches of our common-school course, the better it does its work. A mere glance at the actual work done by the foregoing means will convince us that they are not fully satisfactory. How then can they be supplemented so as to come nearer our ideal? There is only one practical means left; viz., academic instruction in the whole course, with especial reference to a teacher's needs. In no other way can all the details and knotty points be reached, all the difficulties brought up and disposed of. Academic instruction by a proper teacher, who is constantly looking out for an opportunity to call especial attention to the difficulties in the way of teaching, is the shortest and most effective way to reach this end. I am glad to be able to quote an authority on this point. Prof. Bellows, of the Michigan State Normal School, as nearly as I can gather from his report to the Board of Education, is engaged in the very work which I called a little while ago specific theory and art; viz., instruction in the proper methods of teaching individual subjects. He delivered a course of lectures, running through ten weeks, on the methods of teaching arithmetic. "These lectures," he says, "embraced a review of the subject of arithmetic, noting the necessary topical divisions, their proper order and relation to each other, and the most important considerations regarding the nature of the topic and the circumstances of age, etc., of the pupil, to be kept in view in teaching this branch of study. Another considerable part of the work, rendered necessary by a seeming deficiency of academic preparation, has been the training of the students in explanation of processes. It is surprising how few students are found who have any proper idea of what it is to explain an operation. Nine tenths, and probably even a larger proportion of those whom we examine for admission to our work, seem to suppose that telling what is done to get an answer, is giving an explanation." "I have come to feel it," he continues, "to be almost an utter waste of time, if not a trial of patience to be avoided, to examine students for admission upon this point. One of two things, it seems to me, needs to be done; either a better preparation in the matter to which I am referring should be brought by students seeking admission to the school, or we should have more time, especially with the students of our advanced professional courses, for instruction and drill

on this point. The teachers we send out will certainly be found wanting in this particular, if something is not done in one or the other of these directions." Here we have this whole matter in a nutshell. These students had passed, as I understand it, an examination on the subject of arithmetic; an examination equivalent to what is demanded to finish arithmetic in our high schools; an examination in which they gave proofs of a knowledge sufficient to justify their taking up algebra, — a knowledge which, in many instances at least, was all that would be required at our best colleges, and yet a knowledge that was so hopelessly deficient for normal-school purposes that a considerable portion of the time had to be devoted to academic instruction. And what was true of arithmetic was equally true of algebra, as Prof. Bellows testifies; and I have no doubt that the same thing was true of every other branch of study pursued in the institution.

Now, one of two things must be done; either academic instruction must be given in the normal school, or our other schools must furnish this drill. I am thoroughly in favor of the first alternative. I believe thoroughly in normal training for teachers, but I protest against an attempt to change our public schools into normal schools. I protest against introducing into the intermediate and grammar grades of our schools that painful and detailed training which is proper — nay, necessary — to one who expects to become a teacher. The vast majority of our children leave school before they are fifteen years of age, and we ought to give them something more than the full and minute training in the elements of the three R's which it is right that teachers should have. The teacher should know *how* and *what* to teach, and in order to do that he must fully conquer the subject; but he need not try to teach the small boy everything that he himself knows about it. The teacher as a boy in school need know nothing more than his companions; but as a candidate for the teaching profession he must know a good deal more, and he must be drilled in a very different way. Now, the proper sort of instruction can be best given in a normal school. The method of teaching a teacher is not always nor often the best method of teaching the practical man or woman. It would be a criminal waste of time for our high schools to teach all their pupils as those of them ought to be taught who expect to become teachers. The proper attention to methods can be profitably given only in a normal school.

In connection with this point, we may notice a fact of great importance in normal-school work; viz., that a teacher will teach a subject as he has been taught it, and not as he has been told how to

teach it. The student who comes to a normal school and takes merely the professional work in the narrower sense, who studies merely how to teach, will begin his active work as a teacher just as he learned it himself in the first place. If he acquired the knowledge he possesses in an old log school-house, with the very worst appliances and the poorest teacher and methods, he will begin his instruction just as his teacher began with him. His knowledge of methods and principles will be of vast advantage to him, for after he has come to see the defects in his work, as he probably will in course of time, it will aid him greatly in remedying them; but it is just the business of the normal school to show him these defects before he begins to teach, — to save the boys and girls from the ignorance and inefficiency of the teacher. The only way, or at least the shortest and most effective way, to break the power of the spell which those early associations and that first training exercise over the students, is to take them over that ground again, and carefully correct those early impressions, and train them to new modes of thought and new methods of work. A teacher who has been connected for several years with one of our largest normal schools told me recently that he had made a study of this very point, and that he was struck with the fact that all the normal students who on entering the school had passed examinations in the elementary branches, geography, grammar, arithmetic, and history, and had afterwards gone out to teach, had all done their poorest work in just those branches which they had neglected to take in the normal school, and in many cases their work was so poor that it was to be considered a failure, while their teaching of other branches was fair to good; a striking confirmation of the view that a teacher will teach as he has been taught, and not as he has been told how to teach. By the phrase "being told how to teach it," I refer to such directions as would be given in a course of lectures on the proper methods of teaching.

It may be objected to the above statement that inasmuch as the normal teacher would use methods adapted to adults, the normal pupils would not, after all, get the methods that they could use in their own teaching. That would be very true if the teacher should confine himself simply to an ordinary academic drill. But it is a very important part of his business to call the attention of his pupils constantly to the points in which they must deviate from his methods in their subsequent work. The point is that such directions would have a value only in connection with a vigorous academic drill.

Let us examine the course of instruction in the Prussian normal

schools, with reference to the point under discussion. We take these schools because they are all formed after one model, and there, if anywhere in the world, they are able to have purely professional schools; there, if anywhere, they are able to demand at entrance an examination in all the subjects which we generally require for graduation.

I find, on examining the provisions of the law in reference to normal schools, published in October, 1872, by the Prussian Minister of Public Instruction, that they required for admission to the normal school an examination in all the studies afterwards pursued in the course, except theory and art, meaning by that what we included under our term "professional work."

They are examined in religion, language (grammar, rhetoric, criticism), mathematics (algebra, arithmetic, geometry), music, history (ancient and modern), natural sciences (physics, botany, zoölogy, chemistry, physiology), and gymnastics. Now, on comparing the work done in the normal school, we find that they begin at the very beginning in every branch. In German, for instance, they begin with the parts of speech, declension, comparison, conjugation, and follow the subject up through syntax, analysis, rhetoric, punctuation, and criticism. In history they begin with the Greeks, and end with Prussian history. They begin arithmetic, geography, and natural science, writing and drawing.

Now, what is their idea in giving instruction in the very elements of these elementary studies? It is not so much to give academic instruction, considered *as* academic instruction, but rather because they consider this careful study and review of all these elementary branches as a part and parcel of the strictly professional work, and as the shortest way of reaching thorough professional drill in all these various subjects. As if to dispel all doubt as to the purpose of this work, we find the minister telling us in the tenth section of the law, "The instruction which the normal pupils receive is expected to be in its form a model of that which they themselves as teachers will have later to impart. The directors have to insist strictly on correctness both in the presentation of the subject-matter on the part of the teacher, and in the oral and written reproduction of the same on the part of the pupil. The instructor is expected to present simultaneously with the subject-matter the method also." Here you see we have the key to the Prussian view of this whole subject. It is not academic instruction but professional work, and that is its justification.

Now, if Prussia, a country which perhaps better than any other could exact a high grade of preparation, a country nearly all of

whose candidates for admission to normal schools have enjoyed normal-school training, in the sense at least that their teachers have been normal-trained men, — if such a country still deems it of great importance to afford academic instruction in its normal schools, if its theorists consider that its teachers should be taught arithmetic in a different way from that in which its ordinary scholars are taught, surely that affords an argument for the necessity of a similar course here, where our pupils are wretchedly prepared, and where they can in many cases not find good preparatory instruction at all.

In conclusion, let me summarize: What is the relation of academic to professional work? My answer is, It is vital and not merely incidental. Mere knowledge of a subject does not imply a power to teach it. Mere knowledge with some general instruction as to methods and principles, nay, even with particular instruction as to methods in individual branches, is not sufficient to place the student on that vantage ground which every normal-trained student should occupy. The instruction proper to the teacher cannot be found in our public schools at present, and ought not to be found in them in the future; it remains, then, for our normal schools to furnish it. Further, a teacher will teach as he has been taught; consequently the shortest method of attaining the best teaching in our schools is to give our teachers the best teaching. And I am inclined to think that if in any individual case it were necessary to let one or the other go, in general the professional work could be better spared than the academic. I believe that the student who goes out to his work with a thorough normal academic drill in the branches he expects to teach will do better work than one who, while deficient in these branches, has studied the theory of teaching. I claim, further, that he will not only do better work at first, but that he will be more likely to improve, — to attain to that knowledge of principles which will free him from the trammels of previous education and habit.

NOTES ON AN INFANT.

BY J. H. HOOSE.

[Dr. John M. Gregory indicates (EDUCATION, IV.) some of the provinces of research by those who expect to learn the facts upon which to construct a science of education. The following notes were made by Mr. F. H. Champneys, upon his own infant son, and extend from the moment of birth through a period of nine months (*Mind*, XXI.).]

Sucking. — The first thing the child did, when left alone a few minutes after birth, was to suck the blanket in which he was wrapped.

When hungry, he would cram his hands into his mouth with varying precision, and suck them hard. This was observed ever since birth, and seemed to be adopted without hesitation as a means for temporarily appeasing hunger.

At four days old he pushed away his mother's breast when satisfied.

The touch of a warm hand did not induce sucking movements.

No practice seemed to be required for directing the hands to the mouth.

Sneezing was always accompanied by violent movements of all the limbs, the thighs being flexed on the abdomen, the forearms bent, and the elbows thrust forward.

The purpose of the flexion of the thighs on the belly was probably partly to relieve the tension of the suddenly contracted abdominal muscles; but the movements of the arms (and partly those of the legs also) probably had for their cause the necessity for relief of what is called a nervous discharge of great amplitude, such as a sneeze.

Crying was performed at first without any squaring of the mouth. The sound can be exactly expressed by "uga," as pronounced in German. This must have been produced by closing the fauces by the contact of the pillars of the fauces and the soft palate, so as to send all the sound through the nose; the vowel sound being then produced by separating the soft palate and pillars of the fauces, and allowing the sound to come through the mouth.

The child appeared to cry at first for three reasons: (1) From a feeling of loneliness or fright on awakening from sleep, which was relieved by being taken in the mother's or nurse's arms, or even by a touch; (2) from hunger; (3) from pain. The cries seemed to be all different in character.

Smiling was reported at five and a half weeks, but not certainly observed before the end of the eighth week. It was often accompanied by sucking movements. This shows the association of two pleasurable ideas.

Weeping. — Tears were shed two days before the end of the fourteenth week.

Seeing. — The eyes were first fixed on a candle when a week old. On the same day the eyes were fixed on one of the parents for the first time.

Opening of the eyes was accompanied by wrinkling of the skin of the

forehead; the wrinkles, being horizontal, were due to the frontalis muscle. They resembled those produced in adults during an effort to open the eyes when tightly closed, either on account of very dazzling light or of a foreign body in the eye; but were probably only necessitated by redundancy of skin, which is very observable in a young child, and most young animals. This wrinkling gradually ceased.

The ninth day was the first on which anything like habitual opening of the eyes occurred.

It was not before the fourteenth day that the child *took notice* of persons or moving objects.

From the time that he began to use his eyes, bright light gave him much pleasure, and he never blinked except on a change from comparative darkness to bright light; when the moment of this change was past he would gaze for a long time with much apparent delight, and with wide-open eyes, at a lamp or at the gas, however bright. This fact makes it unlikely that the frowning mentioned above was due to being dazzled. He was first able to see himself in the glass at eight weeks old, the experiment having been often used before.

Hearing. — During the first week the child would not start at any noise, however sudden, when unaccompanied by vibration of the room or bed. For instance, no notice was taken of hands loudly clapped close to his ear; but slamming of a door made him start. Just the same starting was observed immediately after birth, when the scale in which he was being weighed went down with a jerk.

It was very difficult to decide when the child really heard first. At fourteen days old he would turn his eyes to his mother when she spoke to him, but even then did not start at sudden noises, however loud, unless accompanied by jerks or vibrations; so that the apparent power of hearing his mother's voice may have depended on his feeling her breath on his face, for it was only when her face was turned towards him while she spoke that he turned his eyes toward her.

In connection with the late appearance of this sense, we must remember that the tympanum at birth is packed with areolar tissue, which only gradually becomes absorbed after birth.

Reflex Actions. — Among these may be noticed the spasmodic start which occurred on any jar or vibration, previously noticed, and also the fact that micturition was always or nearly always indicated by a slight shiver.

The slight provocation necessary for producing a convulsion in children is a well-known sign of their great irritability to nervous stimuli.

Exactly at four weeks old the child started at sudden noises if unexpected, but would not start twice at the same noise if not excessively loud.

Taste. — The child rejected all things given to him cold, even milk, but would take various things not especially nice (such as cod-liver oil) if warm. The temperature seemed to be of more consequence to him than the taste.

Voluntary Movements. — The arms were far more purposive in their move-

ments than the legs, from the very first. The movements of the arms from the first were like those of striking with the fists; the fists, however, being only partially clinched.

Walking. — When one day less than nineteen weeks old, the trial was made of supporting the child on the floor with the feet just touching the ground, and moving him forward. The movements of the legs were always alternate and purposive, each step being perfectly formed; though the feet were lifted unnecessarily high, there was no hesitation nor irregularity. Only when he was lifted too high for one or other foot to touch the ground was this alternate movement interrupted, the foot which failed to reach the ground making a fresh step. It was obvious that the contact of one foot with the ground was the stimulus for moving forward the other foot.

Attempts at Talking. — From nine months the child distinctly imitated the intonation of the voice when any word or sentence was repeated in the same way several times.

About the thirteenth week he began to appear to attempt to join in conversation with a variety of articulate sounds, if talking was going on in the room.

Fear. — The first symptom of fear was noticed at about nine months. It was excited by an unusual sound in the room, but not in the child's immediate neighborhood; he opened his eyes very wide and burst out crying. The second occasion was at about ten months, when sound was again the exciting cause: a toy was given him which squeaked on pressure; he burst out crying, and cried whenever it was offered him, but in a short time he got used to it, became very fond of it, and made it squeak himself.

Remarks. — Records like the foregoing are valuable to biologists, and interesting to readers of all classes, yet they meet only partially the wants of students of educational science. Education is a product whose germs were planted in the souls of the original man and woman. Certain functions of mind and body are fundamental to the very existence of man, and belong to all men. Dispositions of mind, traits of character, forms of body, and tendencies generally, are superinduced upon these original functions, and unite with them to make up the thread and thrum of the fabric of human life; the texture of this fabric is colored variously by obstinate years, and strengthened or made weak by the lives of many generations. A child at its birth represents a sum of original functions, added to a sum of traits and accomplishments in embryo which have survived through its ancestral lines and have been implanted in it by its parents. These descending idiosyncrasies are so numerous that children of the same parents frequently inherit but few of them in common. The educator wishes to know more than the biological facts of life-force and growth of the child; he inquires concerning the extraordinary propulsive energies and procreative capacities of mind with which parentage has endowed it. These idiosyncrasies of a child constitute its personality, and reveal its ancestral families in their personalisms. Parents would perform a valuable work for pedagogical

science if they would record the first appearance and subsequent development of these inherited peculiarities, together with their relative degrees of activity and intensity, as these phenomena indicate and measure the persistence of these differentia.

Examples to illustrate the Remarks. — (1.) A daughter of the writer placed her hands beneath her head when sleeping, when she was but a few days old, quite after the manner of her father, from whom this habit descended to her. (2.) At an early age she manifested great pleasure and interest in peculiar and unusual vocal sounds, developing rapidly much skill and readiness in imitating them. This idiosyncrasy she inherited from her father, who received it from his mother, who possessed extraordinary aptness of voice in imitating tones of musical instruments. (3.) As soon as the child could hold a cup with any ease, she extended the little finger of the hand in which she held it, doing it in so peculiar a manner as to reveal unmistakably an inheritance through her mother, in whose family this idiocrasy is marked. (4.) At the age of twenty months the child could speak but few words plainly, compared to the number spoken by children of her age generally. There are no records to show from which parent this backwardness descended, or whether it is original with her.

The practical value of records of this nature would be great to those who are teaching children; the facts of personality would guide the invention of modes of imparting instruction. The writer returns to idiocrasy numbered (2) above, and refers to some circumstances connected with his school days. He possessed considerable flexibility of voice when a lad, and could pronounce words at sight; yet he read poorly, and with a voice whose natural suppleness and warmth were stiff and cold. Looked at from the interval of years, the boy did not carry the native spirit of his voice into reading; those who taught him to read did not show him that the sentient and emotional qualities of his voice were those which must be seized, trained, and preserved in habits, before he could interpret a period of a printed page in the school-room as well as he could express a sentence of his own creating when on the play-ground.

Finally, educators require data of the kind noted in the body of the above text, in order to construct a general science of education; and they must have data of the nature alluded to in the remarks following the notes, in order to enable teachers to impart instruction in those modes which shall produce the highest value of the science when applied in special practice. These data, being so diverse in differentiæ, must be voluminous, and subjected to the most rigid forms of examination, to discover the unities which they embody.

KANT AND HIS ENGLISH CRITICS.*

THE present year is the centennial anniversary of the publication of Kant's immortal work, the "Critique of Pure Reason." In honor of this event, celebrations have been inaugurated in Europe and America. There was one at Saratoga on the 6th of July, called together in response to the suggestion of Prof. J. W. Mears, of Hamilton College. The Concord School of Philosophy devoted the first week of August to lectures on Kant. Able professors presented able papers at both of these celebrations. Immanuel Kant was a genius so vast, comprehensive, and profound in philosophy, that such lights as Descartes, Spinoza, Lord Bacon, and even Leibnitz became pale when his star ascended the sky. Like Aristotle himself, "the father of all those who know science" (as Dante calls him), he has been the origin of widely different schools of philosophy. No system of thought since his time has retained any hold on the respect of thinkers unless it defined its relation to Kant's system, and fixed its location by Kantian latitude and longitude. Kant's "Critique of Pure Reason" has furnished the "equator" and the "first meridian" to everything in philosophy that has been written in this century worth the reading. Even at second hand, or fourth, eighth, or tenth hand, his powerful, critical mind has penetrated to inferior writers, and given them their "First Principles." Herbert Spencer's "Unknowable" is a statement of the Kantian critical position at fourth hand, seeming to come through Mansell or some other disciple of Sir William Hamilton, from the latter who found it in the Kantian original, but omitted to bring with it the wonderful doctrine of the "Antinomies," which would certainly have made strange havoc with Spencer's doctrine of "The Knowable," had he studied that doctrine.

Just at this time the press teems with new books on Kant. Many have appeared, and very many more are announced, privately and otherwise. Dr. Hutchison Stirling, of Edinburgh, who is said to know the great work of Kant by heart, and who wields the most powerful literary pen in the field of philosophy, is soon to publish a work on Kant, critical and expository. Every year it is becoming more and more the settled routine in our colleges to begin any thorough philosophic study with a discussion of the Kantian Critique. Especially in the realm of moral philosophy are the Kantian ideas zealously expounded. Ethical philosophy would have become extinct in this age had it not been for Kant. Kant has founded it on an adamantine rock.

The subsequent German philosophy rose on the Kantian basis: edifices as wonderful as the systems of Plato and Aristotle, Proclus and Plotinus;

* Kant and his English Critics. By John Watson, LL. D. (Glasgow University), Professor of Philosophy in Queen's University, Kingston, Ontario. Glasgow University Press: Mackelhose. (New York: Messrs. MacMillan & Co.)

marvellous revelations of the nature of the thinking activity, and of the objective, substantial existence of mind as the principle of the world. The Greek movement in thought is the only other great philosophical movement, and it is an objective, ontological system. The German movement is psychological, and therefore fits the want of modern thought, which is subjective, sceptical, and scientific.

The work of Prof. Watson is destined to receive much attention from Kantian students. Its view is more favorable to the results of Kant than most books on the subject. Its author has written many very acute articles for the "Journal of Speculative Philosophy," and holds a position in the foremost rank of philosophical thinkers in our day. He is a man of great and growing insight, specially gifted in the comprehension and interpretation of this great psychological movement in philosophy inaugurated in Germany. In using this word "psychological" to designate the great German movement, we are not unmindful that the Scotch philosophy has been called "psychological" also. Without questioning its value in its sphere, we would suggest that it belongs chiefly to the department of "anthropology," or the science of the interaction of the soul and the body; because it deals chiefly with phenomena of that realm (the laws of association of ideas, the matters of immediate sense-perception, sleeping, dreaming, etc., etc.), and does not recognize any such thing as the observation of a mental activity as such. The "Dialectic" of the German philosophy has its significance in this work of seizing activities and forms of mind. Kant, it is true, was of Scotch descent, but his thinking is thoroughly Teutonic. With the Scotch "common-sense," we never rise to an idea of thinking activity unconditioned in sense-perception, and hence to knowledge of the possibility of a divine mind, — such as St. Anselm, St. Augustine, St. Thomas Aquinas conceived. And yet the Scotch philosophy has had a great function to perform in the development of the Protestant movement in religious thought, although chiefly of a negative character. Judging by the movement of the Scotch mind to day, that wonderfully tenacious and alert intellect is to change its basis to the German starting-point and retain its strong hold on thinking minds. It seems that Prof. Watson is a graduate of the University of Glasgow.

It is difficult, in a short notice, to give an adequate view of the varied contents of this work. With a statement of the whole of the positive side of Kant's "Critique of Pure Reason," and a general account of the results of the "Dialectic," the author interweaves a criticism of what he regards as the misapprehensions of Mr. A. J. Balfour, Mr. Henry Sidgwick, and Dr. Hutchison Stirling, together with an examination of the main position of English Empiricism as represented by Herbert Spencer and the late Mr. George H. Lewes. To all this he adds a sympathetic criticism of the "Critique" itself, intended to show wherein Kant has failed to free himself from the benumbing influence of his dogmatic predecessors.

The first chapter, besides containing a criticism of Mr. Balfour's objec-

tion to the "Transcendental Method," gives a statement of the main aim of the "Critique," and of the method followed by Kant in the construction of his philosophy. The marks which distinguish criticism from dogmatism are stated, and the revolution accomplished by Kant is shown to lie in his transcendence of the Sensationalism of Locke, as developed to its issues in scepticism by Hume, and of the dogmatism of Wolff and others.

In the second chapter, an exposition is given of Kant's views of Time and Space. This is based mainly upon the "Prolegomena" and the "Transcendental Æsthetic" of Kant. It illustrates the "critical" as distinguished from the "dogmatic" conception of knowledge. An examination is here made of Mr. Sidgwick's objection against Kant, that he has two different ways of meeting the charge of Idealism, one being followed in his "Prolegomena," and the other in his "Refutation of Idealism," inserted in the second edition of his "Critique of Pure Reason." Prof. Watson here contends that Kant has only one way of refuting Idealism, and that the differences which Prof. Sidgwick finds are only superficial.

The third chapter deals with the "Transcendental Analytic," which is the central part of Kant's theory of knowledge; he seeks to show that in it Kant has carried further the transformation of ordinary conceptions, — this transformation which he had begun in the "Transcendental Æsthetic." The relation of the categories to the various classes of judgment, to the "Deduction of the Categories," and to the "Schematism," are explained by Prof. Watson.

In the next chapter, after a short statement of Kant's view of the relations of metaphysics and psychology, a full examination of the "Psychology" and "Psychogeny" of Mr. Lewes is made, — in which the author shows that the doctrine of Evolution, as applied by recent Empiricists, has no bearing upon Kant's problem, and that a confused conception of what that problem really was is responsible for the supposition that it has such a bearing. It is further shown that the doctrine of Lewes, that the physical organism is the only subject of knowledge, and his view that the rise of knowledge can be explained by the facts of biology, rest upon uncritical assumptions, confusions of thought, and ambiguous language.

Chapter fifth gives a statement of the meaning of the Principles of Judgment, and examines generally the view taken by Dr. Stirling of the distinction of the "Mathematical" and "Dynamical" categories and principles.

Prof. Watson next goes on to give a statement of Kant's proofs of those principles, and devotes a good deal of space to the explanation of the principles of Substance and Causality. In view of the recent controversy on this subject, our author goes over carefully each step of the Kantian proof, in order to prepare us for the following chapter, in which he undertakes an examination of Dr. Stirling's position in regard to Kant's doctrine of Substance and Causality, and, as well, of Mr. Balfour's position in that regard. Prof. Watson interprets the Kantian doctrine differently, and attributes their objections to the interpretations which they have severally given to the

Kantian exposition. He regards his own view as the only correct interpretation.

The eighth chapter contains a summary of Kant's "Metaphysic of Nature," dealing with the conceptions of matter, motion, and force, and by far the fullest presentation of this work of Kant to be found in the English tongue. After this he devotes a chapter to Spencer's doctrines on Matter and Force in his "First Principles," and finds therein many unjustified assumptions and much inconsistency.

Chapter tenth contrasts Spencer's "Unknowable" with Kant's "Noumenon," showing in detail how superficial is the resemblance between them; and in particular, that while the "Thing-in-itself" of Kant is a hypothetical conception, the "Great Reality" of Mr. Spencer is dogmatically asserted to exist, while yet it is declared, inconsistently, to be "unknowable." It is also shown that the transfigured Realism of Mr. Spencer is an incoherent theory, and that its incoherence is not superficial but radical. He shows also how Mr. Spencer, in his account of the "Substance of Mind," falls into the paralogisms detected by Kant in all dogmatic psychologies; and that when he (Mr. Spencer) attempts to show that human reason falls into "alternative impossibilities of thought" when it attempts to comprehend the absolute, he has stumbled upon Kant's "Antinomies of Pure Reason," without seeing, as Kant did, how they may be solved.

The last two chapters are devoted to an extended examination of Kant's own theory of knowledge. In the first of these, the abstract opposition of the *a priori* and *a posteriori* elements of knowledge, and of sense as receptive and thought as originative, the want of logical development in the system of categories, and the contrast of pure and mixed categories, — all these are held to indicate a certain imperfection in Kant's way of looking at things, which must be avoided in a true theory. The book concludes with an examination of Kant's view of the different elements combining to produce knowledge, — sensation, the pure forms of space and time, the categories, the schemata, and the "pure I," — the gist of which is to show that while the main result of the "Critique" on its positive side is to bring into prominence the central truth that knowledge is a synthesis of subject and object, intelligence and nature, Kant has sometimes allowed himself to be confused by psychological distinctions that are either inadequate or belong purely to psychology.

WM. T. HARRIS.

THE NATIONAL COUNCIL OF EDUCATION.

THE National Council of Education was organized at the annual meeting of the National Educational Association in 1880, held at Chautauqua, for the purpose of aiding the work of that Association by furnishing maturely considered conclusions in regard to important questions arising in the province of education. It was necessary to form a deliberative body composed of the representative teachers and educators in the nation; and this was accomplished by a provision that the five departments of the National Association should elect, each, three members, and the Association as a whole twelve members more, giving twenty-seven members elected by the National Educational Association. These twenty-seven elect twenty-four associates, and thus fifty-one members are provided for, — the entire membership of the Council. The term of service in the Council is six years. Doubtless there are as good men in the National Educational Association outside of the Council as inside it; but the twenty-seven elected members are its chosen representatives. It may be supposed that the twenty-four members elected by the twenty-seven are selected with even greater care from the list of prominent educators in the nation. It is true, and will remain true, that outside of the National Association will be found a far greater number of able men engaged in teaching than within it; nevertheless, there is no feasible method of securing from these a selection of representatives who will act in a council. The organization of the Council as it is may therefore seem the only practical one.

At the late session of the National Educational Association in Atlanta, the Council held its first annual meeting for work. A preliminary meeting had been called to consider the reports of the committees, and a fair attendance had been secured on Lookout Mountain, just previous to the Atlanta meeting. A number of reports were in readiness, treating very important subjects. It was clear enough that the Council must settle many questions in advance, regarding the forms of its own work, before reaching any results that would do to submit to the National Educational Association. There were the questions in regard to the form in which the conclusions of the Council should be presented; in regard to the amount of responsibility assumed by the entire body for the views contained in the reports adopted by it; and chiefly there was the question of formulating views which all could indorse as true. While the meeting at Atlanta did not complete anything which could be reported as its verdict to the National Association, yet exceedingly important preliminary work was undertaken and accomplished. It was seen what advantages a small body of regular members has over a large body of constantly varying membership. There could be animated debates carried on, and genuine progress made towards a common conviction on the question under debate. This, it was evident, was the most valuable work of the Council, — to digest its opinions, offered as solutions to the edu-

cational questions of the day. The free debate, carried on with as little formality as a conversation, made such modification possible, and each one could correct the partialness of his own insight through the views presented by his fellow-members. Those who attended the meetings of the Council came away with the conviction that the new organization would be of very great value to the cause of education, not only in aiding the Association, but especially in the way of maturing the views of the members of the Council. Many had been sceptical on the subject, and had supposed the Council of doubtful utility. Now it was seen by all that such a compact body for hand-to-hand debate has great possibilities for usefulness.

It is conceded that the mere statement of results reached by the Council will be of less value to the educational intellects of the country than a discussion of the grounds for the conclusions reached. It is better to produce conviction through a thorough study of the subject, than to furnish an oracular dictum to be quoted as authority by the average teacher. But even authority has great practical use for the working masses of mankind. It is better that teachers shall adopt correct views without a full comprehension of them, than wrong views with any amount of deep reasoning at the back of them.

Within the past ten years there has been a succession of attacks on the school system of the country, initiated by men of first-class ability, and sustained by the press of the nation. No doubt the people and the press are unwavering in their support of the adopted school system; but the attention given to these attacks indicates on the part of the public a widespread demand for a better understanding of the grounds of its support of the schools than is given by a mere blind following of tradition, which uses fine names and calls the public-school system the safety of the Republic, the defence against anarchy, etc.

Here is a field of work for the Council, — a field of indefinite size, — for investigation and conclusion and formulation and expounding of grounds and reasons. If the Council shall furnish only negative impulse to educational thought, and arouse great opposition on the part of educators jealous of their right to formulate their own conclusions, yet this very circumstance will be a great boon to the profession. The choice of subjects will remain with the Council, and the opponents will simply furnish volunteers to the cause of clearing up and formulating results in the most important matters of education.

Whatever, therefore, may have been the outlook for the Council at its first appearance, its future is now assured. It remains only to secure more frequent meetings, and to hold these meetings when they will not interfere with those of the National Association. Perhaps it will be found advantageous to hold sectional meetings, — portions of the Council meeting at convenient places, central to the members attending, and holding their round-table sessions to discuss the questions propounded for solution.

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THE CONCORD SCHOOL OF PHILOSOPHY.

AFTER three sessions in as many years, this unique academy has reached a form in which it seems to interest the public deeply, and to be performing its own proper work with good effect. Of course it is not yet fully understood by the newspaper correspondents who write about it, and who indulge in much nonsense or fine writing, or both, concerning it, — now puffing this lecturer, now scoffing at that, and displaying, to those who really attend the school and comprehend its results, their own superficial acquaintance with it. One or two of these correspondents, who assume to be oracles in regard to it, though staying away from most of the lectures they have reported, have made themselves ridiculous and brought the school into some little contempt by their airs and revelations. The best way to find out what has been done at Concord since Mr. Alcott opened the school in 1879, is of course to go there and see while the lectures are going on. Another way, not so good, but the only one available to most persons, is to read the reports of the lectures and conversations, which this year have been fuller than ever before. The least instructive way is to read the inferences and guesses of newspaper men who drop in once a week and stay an hour, or who sit at a distance and construct out of their inner consciousness a theory of what the Concord School has been, is now, and is going to be. Vennor's weather predictions have about the same practical value that such writing possesses.

The school seems to have been from the first very modest in its aim and method; not puffing itself and seeking to create a sensation, but going to work steadily and with a definite plan to *teach* something. It has never been so successful in realizing this purpose as during the late session; never so much like a *school*, and so little like those show lectures and sermons in which ambitious mediocrity advertises itself nowadays, and which have given many persons a prejudice against the Concord exercises, supposing them to be of the same sort. But such lectures are quietly excluded from the list, or if accidentally they appear once, are silently dropped. The list is carefully made up year by year, not from lecturers who itch to say something, but from those who seem to have something to say which the school ought to hear; not for the sake of making converts to Hegel's logic, or citizens of Plato's republic, or one-sided disciples of any sect or man, but in order to form some image of philosophy in the mind, and some purpose towards "plain living and high thinking" in the soul. For both objects, literature is indispensable; and therefore the inseparable conjunction of metaphysical and literary instruction, not only in the Concord School, but in all the great philosophic periods of history.

We do not understand that there is any purpose on the part of the managers of the school to give up its literary features; but on the contrary, to give its philosophy a higher literary form, as has manifestly been done since the first session in 1879. Indeed, the most marked effect yet produced by

the school has been the change wrought on the style of its principal teachers. Dr. Harris is less German, Mr. Alcott less vague, Dr. Jones less extemporaneous than at first; while the lecturers who do not strictly regard the philosophic form of utterance will be found to have approached it more nearly from year to year.

A special feature at Concord this year has been the attention paid to Kant, in consequence of the anniversary of his first appearance as a world-instructor in philosophy. Up to 1781, Kant had been a narrow professor, like so many in our modern universities; from that date he takes rank as the maker of an epoch. In celebrating this epoch, the Concord School did not, as some of its shallow critics imagine, commit itself more unreservedly than before to the gerund-grinding form of metaphysics; it simply paid due respect to a great thinker by setting his work in the broad light that competent students of various opinions and habits of thought could shed upon it. The publication of the Kant Papers, by Dr. Harris, in his "Journal of Speculative Philosophy," will give an example, the best yet afforded in print, of what the Concord School can do, — but an example of its activity only on one side.

The great merit of that singular combination of camp-meeting and university is, to our mind, that it unites in one corps of instruction, one conference of enthusiasts, the independent opinions and the consentaneous spirit of three or four different schools of philosophic thought. *E pluribus unum* could be its legend, not less than that of the nation in which it sprang up, and whose best purpose it so well illustrates that the many defects in its apparatus and achievement thus far can well be overlooked. To force this natural unity — this *concordia discors* — into a hard and fast didactic system would have some apparent advantages, especially for narrow minds; but it would destroy the main object for which, as we read it, the school exists. Therefore, as its favorite poet says, let

> "The young lambs bound
> As to the tabor's sound"

in the ever-youthful utterances of Mr. Alcott; let the Platonic and Aristotelian "cataracts blow their trumpets from the steep" of Dr. Jones's and Dr. Harris's philosophy; and let (occasionally) "the winds come to us from the fields of sleep" as we contemplate "subject-objectivity" in Kant and Hegel. The observant spectator will say, as Wordsworth did,

> "Ye blessed creatures, I have heard the call
> Ye to each other make; I see
> The heavens laugh with you in your jubilee."

The year in which a spiritual philosophy, earnestly taught and generously held, makes such a "dent" in the practical American mind as Concord has now made, must be regarded by us, at least, as an acceptable year of the Lord.

A CRISIS IN AMERICAN HISTORY.

THE statement is brief: Hon. James A. Garfield was inducted into the office of President of the United States of America, March 4, 1881. The Senate of the United States was convened in extraordinary session soon thereafter, to transact such business as the President should place before it. Among the names nominated for public office by Mr. Garfield was that of Hon. William H. Robertson, of the State of New York, to be collector of the port of New York. One of the United States senators of that State, Hon. Roscoe Conkling, was opposed to the confirmation of Mr. Robertson by the Senate, because the latter gentleman represented ideas which are directly opposed to those which are embodied in the public career of the former. Failing to insure the rejection of the nomination by the Senate, after a long struggle, Mr. Conkling suddenly resigned his position in Congress, May 16, taking with him his colleague, Senator Thomas C. Platt. The ex-senators immediately appealed in person to the Legislature of the State of New York, then in session, to be re-elected to the positions which they had just abdicated. The real ground of this appeal consisted of opposition to the theory of the administration of the government of the United States as it was illustrated by the action taken by the President. A bitter struggle ensued in the Legislature, which was terminated July 23, by the complete overthrow of Mr. Conkling and the ideas which he advocated.

This date, July 23, 1881, will ever be memorable in the annals of the political history of the United States as noting a crisis in American history. A hasty review will present the case. President Jackson may be fairly credited with having given an animated existence to the system of patronage which has grown to so great proportions in the politics of the country. The system exemplifies its motto, "To the victors belong the spoils." The system rewards personal partisanship and punishes manly independence of opinion and expression of sentiments; it is not content to reward friends, but it must revenge itself upon opponents; it subverts the merits of a cause to the demands of a demagogue; it forbids any voice to a minority, other than that which is dictated to it by the majority; it introduces the theory of the "unit rule" into conventions; it conducts "snap caucuses"; it "packs" caucuses; it claims that every man has his price at the polls, and decrees the price for which he must sell his vote or suffer political ostracism; it tends to exalt public offices above other places of honorable labor; it tends to demoralize the estimated sacredness of suffrage; it is at war with the very genius of American liberty, — the vigilance, intelligence, and integrity of the citizen, and his devotion to the public weal; it claims for United States senators, as individuals, the prerogatives of the Senate itself, and those of the President of the United States.

The year 1861 witnessed the beginning of the Confederate war, upon which the administration of the government of the United States became at

once military in spirit, which is but another name for centralization. Under the necessities of the hour the people accepted the despotism of circumstances. General Grant ultimately became the personification of the government; he left the field, and a grateful people placed him two terms in the White House. Bred to a military life, he assumed the duties of the civilian with the bias of his training; he saw the individual too often where he should have seen the cause. Hon. Roscoe Conkling, a civilian, who best represented the system of patronage, became the favorite of President Grant; patronage increased the power of its representatives until they appeared to scorn the theory of personal rights except those which were mortgaged to the "machine." President Hayes was bred a civilian, and was opposed to the centralization which patronage had developed during the previous years; Mr. Conkling became an enemy to his administration. In 1880 the theory of the "unit rule" was disavowed by the national convention which met at Chicago; this action was a sore disaster to the disciples of patronage as led by Mr. Conkling, who saw in this reverse the downfall of the theory which he had so ably championed. General Grant was not nominated for his third term, and General Garfield, a civilian, was placed before the people as standard-bearer. March 4, 1881, he was made President. The idea of patronage was embodied in Mr. Conkling, that of individual liberty in the President. Mr. Garfield nominated Judge Robertson to be collector at New York, a man who represents in its fullest measure the idea of manly independence and abilities which sustain American institutions. Mr. Conkling began to war with the administration as he had done under Mr. Hayes; it was the conflict of patronage with personal liberty. Five long months the contest waged; the theory of patronage was exemplified in its legitimate outcome by the bullet of the assassin as it sped to the life of the President. Mr. Conkling was defeated July 23; the President still lives; patronage has met in deadly strife with the people, and civilian ideas have conquered. Political slavery has succumbed to personal liberty, in the first direct issue which they have ever had in the history of the United States. The crisis has been safely passed. The teacher of history will have a sacred duty to discharge in the future in defining the limits of patronage in the administration of our government.

MISCELLANEOUS NOTES.

ALTHOUGH Dean Stanley has finished his course upon earth, yet his works will remain long among the living. Of his labors with the pen, no one work will be cherished more by educators than his history of the life of Dr. Thomas Arnold, of Rugby. In this labor of love the noble-hearted Dean erected a monument to a man whose memory is dear to every teacher; the volume is a tribute which perpetuates the honor of him who conceived and executed it, as well as that of the illustrious dead whom it commemorates.

GEN. JAMES A. GARFIELD, President of the United States of America, was shot at 10 o'clock A. M., July 2, while he was in the railway depot at Washington. An office-seeker, named Charles J. Guiteau, who had been disappointed in his efforts to secure an appointment at the hands of the administration, deliberately attempted to assassinate the chief magistrate. The President survives the attack. All nations have been prompt and sincere in expressing abhorrence at this endeavor to strike down in cold blood the representative of a great nation. Acts like this cause one to pause and reflect upon the dangers which threaten republican forms of government. An editorial elsewhere discusses the case as it is related to the political history of the country.

MRS. GARFIELD, wife of the President, has come prominently before the world since her husband was assaulted. Her heroic courage, her cheerful bearing when in the presence of the patient, her hopeful spirit amid all the discouragements of the symptoms, her dignified and womanly conduct towards the public, have been themes for universal remark and commendation. Mrs. Garfield has exhibited the spirit and form of an American home. Her home is but one among countless numbers in the United States which are characterized by similar traits of wifehood, motherhood, and womanhood. These homes constitute the glory of America and the strength of the Republic. Educators may feel justly proud of these products of their labors.

THE American Institute of Instruction, the oldest of our American educational associations, held its fifty-first annual meeting at St. Albans, Vt., July 5, 6, 7, 8. President Mowry and his official associates had made excellent arrangements for a very large, as well as a very instructive meeting; and among the expected speakers was President Garfield. The assassination of the President on the previous Saturday so shocked the public mind that plans for summer pleasures or improvement were temporarily suspended, and a cloud was cast over all the purposes of our teachers. Notwithstanding this fact, a very large membership met at St. Albans, numbering eight hundred or more; while at the open-air meeting on the Park, Friday, nearly two thousand persons assembled to listen to educational addresses and to consider the lessons of the hour. The literary exercises of the Institute were of the highest order, and some parts were of exceptional excellence, while the attendance on the meetings from first to last was well sustained. As a whole, it was one of the very best meetings of this able body of educators

THE National Educational Association, with its several departments, and the National Council of Education, met at Atlanta, Ga., July 20, 21, 22, and 23. President Smart, of Indiana, planned and executed its proceedings in a praiseworthy manner. The attendance, as was expected, was largely from

the Gulf States, with about forty representatives of the Northern belt; the extreme hot weather, at the North as well as at the South, hindering a large number from attendance. The papers were able, and in most cases the writers took advanced views of educational progress. The discussions, as usual, brought the conservative and progressive advocates into strong antagonisms. The great gain expected to flow from this meeting will come from the union of the educators of all parts of the country in the sections where the Association now held its first meeting. Great unity and brotherly feeling were manifest, and all the lessons and influences of the meeting point towards a strong and united policy in educational affairs in all of the American States. The educators of the North were enabled to see to some degree the great efforts which the Southern people are now making in the direction of good free schools, and were also able to understand some of the great difficulties which have attended the work hitherto and still encompass it. On the other hand, the educators of the South were made acquainted with leading Northern educators, with whose work they will in the future heartily co-operate. The election of State Superintendent Orr as the president of the Association was a compliment to the hospitalities of the South and to the earnest spirit of her educators. The next annual meeting of the Association will probably be held at Saratoga, N. Y.

THE action of the Chinese government in recalling the educational mission which it had established at Hartford, Conn., is indicative of conservatism that Americans can hardly appreciate. Especially is this true when it is recollected that an American university has a chair of Chinese Language and Literature, which is occupied by a native of the Celestial Empire. The ostensible ground for the action of the Chinese authorities is that the youth were becoming too much Americanized in their customs and habits. It is quite probable that the Chinese educational missions in Europe will be continued. While deprecating the removal of the youth, yet the ideas which intelligent Chinese have seized in America will continue to expand in the Empire of the East. Theories, institutions, and mechanical inventions which are peculiar to America can afford to bide their time; they are destined to have a place sooner or later among all the nations which have organized forms of government. We predict that but few years will pass before the government of China will free itself from the conservatism which the destruction of the Hartford mission indicates. A just and liberal policy pursued by the government of the United States towards China would restore confidence rapidly towards us among that people.

THE subject of over-education is being now agitated in Canada and the United States; and in the discussions held thereon, we observe that the system of "cramming," so common in most of our schools, comes in for a fair share of comment and condemnation. At the formal opening of the

model schools in connection with the normal school, recently held at Ottawa, Dr. Hodgins, the Deputy Minister of Education for Ontario, said it was most important in a school professing to be a *model* school for other schools, that this question should be duly considered. Medical men had frequently called public attention to the evil effects of "cramming," or overwork of the brain. He thought that the difficulties arising from cramming might be obviated by the teacher devoting sufficient time to explaining the next day's lesson and instructing pupils how to proceed. This suggestion is a wise one. The great difficulty which pupils experience is, how the work is to be done; a great deal of time is lost in simply trying to find out the way to proceed. In New York, Mr. Richard Grant White, the well-known philologist, has been giving his opinion in the New York "Times," in which he speaks most strongly on the subject. He says, "The system, instead of benefiting boys and girls, fails to train young people for the duties and business of life. It rather makes them bumptious and impertinent, and gives them a smattering of knowledge which, in its practical results, is worse than no knowledge at all."

At a meeting of the Leeds (Eng.) Board of Education, the subject of having penny savings banks in connection with the schools (under the direction of the Board) was discussed. It was stated that in France and Belgium, the establishment of savings banks in schools had largely contributed to the habits of thrift which are characteristic of these people. The idea of school savings banks originated in France in 1834, and there are now in that country 1,026 of these institutions, with 213,135 depositors; the amount deposited being 4,246,613 francs, or about $849,322. Similar banks were established in other foreign countries: in England in 1837; Italy in 1834; Saxe-Weimar, Würtemberg, in 1846; Prussia and Switzerland, 1851; Hungary, 1860; and Belgium, 1866. School-teachers keep the bank-books of the pupils as long as they attend school. No pupil can withdraw the whole or part of a deposit without the consent of parents or guardian.

English school-boys' holidays are exceedingly long. If they are not unnecessarily so, on health grounds, no objection can be raised; but this is being questioned in many quarters. Says the London (Eng.) "Globe": "The entire change involved in the return home for the holidays is no doubt beneficial in many ways, but it is not so necessary as with older folks, and it is far more complete. It is far too complete as a rule, and not unfrequently undoes in six weeks what it has been the aim and object of four or five months of training and discipline to achieve, in the way of the formation of character and habits."

The new code recently introduced by Earl Spencer and Mr. Mundella into England makes several changes which, though referring to matters of detail, are of vital importance. They refer mainly to compulsory education,

and our readers may get an idea of the stringency of the law in regard to this question in England from the following summary of the provisions recently introduced: Compulsory by-laws everywhere; employers to be prosecuted for employing any child who ought to be at school; by-laws to be paramount; out-door pauper children to be subject only to the same law of attendance as other children; employment certificates made identical with by-law exemptions up to thirteen years of age.

THE Chautauqua Teachers' Retreat has been very successful this year. A larger number of teachers has attended than ever before, and the interest in the exercises has been greater.

Lessons and lectures have been given on geography, English literature, vocal music, clay modelling, drawing, elocution, gymnastics, kindergarten methods of instruction, psychology, and pedagogy.

The instructors of the Retreat were Secretary Dickinson, of Massachusetts; Prof. S. T. Frost, of Massachusetts; Dr. John Kraus and Mrs. Maria Kraus-Boelte, of New York; Prof. Nathan Shepard, of New York; Prof. MacClintock, of Johns Hopkins University; Prof. L. W. Osborn, Adelphi Academy, Brooklyn, N. Y.; Edward A. Spring, sculptor, Perth Amboy, N. J.; Prof. T. F. Seward, Orange, N. J.; Prof. S. S. Curry, of Boston University; and Prof. Frank Beard, of Syracuse University. It was reported that there were one hundred and fifty-three teachers in the Retreat, representing twenty-two States and Canada.

Next year there will be added to the course of instruction, rhetoric, and exercises designed to teach the true method of teaching the different branches of natural history. Skilful teachers will be employed, and no pains or expense will be spared to make the Teachers' Retreat a success. Especial attention will be given to methods of teaching founded on the philosophy of the mind, and illustrated by school exercises. The museum and teachers' library, both lately established at Chautauqua, will furnish the instructors and members of the Retreat with abundant means of teaching and study.

Chautauqua offers rare advantages to teachers throughout the country for a quiet study, during the resting period of the year, of the principles of teaching, as well as the best method of their practical application. The teachers of the country, during the school year, are constantly pouring out their accumulated knowledge before the hungry pupils. They need to devote a portion of every year to replenishing their exhausted intellectual possessions. But they need rest as well as new knowledge. If, therefore, some way can be contrived by which both can be gained at the same time and by the same processes, the problem of "How shall the summer vacation be spent?" is solved. Dr. Vincent, the able president of the Chautauqua Teachers' Retreat, has solved it. On the banks of one of the most beautiful lakes in the world, he has established an institution in which rest and work are so combined that an accumulation of physical and spiritual strength is the

sure result of the union. It is expected that next year the Chautauqua Retreat will number a thousand members.

THE Social Science Association is now making, through its educational department, investigation into the physical and mental development of infants. In connection with the discussion of this subject, the following letter of Prof. Darwin, of England, will be read with interest: —

DOWN, BECKENHAM, KENT,
RAILWAY STATION, ORPINGTON, S. E. R.,
July 19, 1881.

Dear Madam, — In response to your wish, I have much pleasure in expressing the interest which I feel in your proposed investigation on the mental and bodily development of infants. Very little is at present accurately known on this subject, and I believe that isolated observations will add but little to our knowledge; whereas tabulated results from a very large number of observations, systematically made, would probably throw much light on the sequence and period of development of the several faculties.

This knowledge would probably give a foundation for some improvement in our education of young children, and would show us whether the same system ought to be followed in all cases.

I will venture to specify a few points of inquiry which, as it seems to me, possess some scientific interest. For instance, does the education of the parents influence the mental powers of their children at any age, either at a very early or somewhat more advanced stage? This could perhaps be learned by school masters or mistresses, if a large number of children were first classed according to age and their mental attainments, and afterwards in accordance with the education of their parents, as far as this could be discovered.

As observation is one of the earliest faculties developed in young children, and as this power would probably be exercised in an equal degree by the children of educated and uneducated persons, it seems not impossible that any transmitted effect from education could be displayed only at a somewhat advanced age. It would be desirable to test statistically in a similar manner the truth of the often-repeated statement that colored children at first learn as quickly as white children, but that they afterwards fall off in progress. If it could be proved that education acts not only on the individual, but by transmission on the race, this would be a great encouragement to all working on this all-important subject.

It is well known that children sometimes exhibit at a very early age strong special tastes, for which no cause can be assigned, although occasionally they may be accounted for by reversion to the taste or occupation of some progenitor; and it would be interesting to learn how far such early tastes are persistent, and influence the future career of the individual. In some instances such tastes die away without apparently leaving any after effect; but it would be desirable to know how far this is commonly the

case, as we should then know whether it were important to direct, as far as this is possible, the early tastes of our children. It may be more beneficial that a child should follow energetically some pursuit, of however trifling a nature, and thus acquire perseverance, than that he should be turned from it, because of no future advantage to him. I will mention one other small point of inquiry in relation to very young children, which may possibly prove important with respect to the origin of language; but it could be investigated only by persons possessing an accurate musical ear: Children, even before they can articulate, express some of their feelings and desires by noises uttered in different notes. For instance, they make an interrogative noise, and others of assent and dissent in different tones; and it would, I think, be worth while to ascertain whether there is any uniformity in different children in the pitch of their voices under various frames of mind.

I fear that this letter can be of no use to you, but it will serve to show my sympathy and good wishes in your researches.

I beg leave to remain, dear madam, yours faithfully,

CHARLES DARWIN.

TO MRS. EMILY TALBOT.

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